Telephony.

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HARD WORK.

I have no secret but hard work. This is a secret that many never learn, and they don't succeed because they don't learn it. Labor is the genius that changes the world from ugliness to beauty, and the great curse to a great blessing.—Joseph M. W. Turner.

A Battle Wrecked Exchange.

At various times Telephony has recorded the complete interruption of telephone service for days, and even weeks, in cities in different parts of the country. These interruptions to service have been due to many causes such as explosions, fires, floods and even an earthquake. Still another cause, never before anticipated, has been added to this list—destruction by artillery fire in a battle between opposing forces.

In these modern times it seems impossible that in a city of over 350,000 population, a real battle could occur. Such, however, was an actuality in the city of Mexico last month when a battle raged for three days in the heart of the capital of the republic adjoining the United States on the south. The main telephone exchange was located directly in the line of fire between the rebels and the government forces. The operating room, located on the top floor of the building, was especially exposed to the bullets and shells, as it rose above the neighboring structures.

The story of the faithfulness of the operators and other employes of the telephone company in staying at their posts until driven out by the rain of shells and bullets, is told on other pages in this issue. The photographs show vividly the damage wrought and, after looking at them, the conduct of those who stuck to their duty under such conditions, must be admired.

A Buyers' Reference Index.

There is inaugurated in the advertising columns in this issue, a new feature, designed solely for our subscribers' benefit and convenience—a buyers' reference index. Before deciding definitely on its plan and style, a careful examination was made of all the progressive technical journals with a view of determining upon some plan which would secure for Telephony readers the most efficient kind of a reference index—one which would make accurate reference easy and expeditious.

The plan of this particular kind of a buyers' reference index was suggested by a similar one used very successfully by a representative engineering publication.

All Telephony advertisers are listed in this department; each advertiser is assigned a letter and number, dependent upon location in the index to advertisers. This brings about a reference to the index to advertisers, where, preceding each company or individual name, will be found a corresponding letter and number. The page number following each name in the index to advertisers will make it convenient and easy to locate immediately any advertisement, and the particular line desired.

Telephony's advertising columns have always been representative of the best and latest pertaining to the industry and we want our subscribers to not only continue the practice of consulting the various advertisements, carefully and regularly, thus keeping fully posted on all the developments and advances made in the art, but to also acquire the habit of consulting this buyers reference index when buying is anticipated.

DON'T LOSE YOUR GRIP!

Noah was six hundred years old before he knew how to build an ark—don't lose your grip.—Elbert Hubbard.

All Men Are Not Born Equal

By HERBERT KAUFMAN

Nature doesn't cast from molds, she's an artist—she never repeats herself; she doesn't produce two things exactly alike; her trees never bear the same number of leaves; her plants never grow two pieces of fruit that exactly match. Being a very prolific and resourceful person, she puts a dab of individuality in everything she creates —especially MAN.

Opportunities are equal, but the ability to grasp them, the mentality to appreciate them, the strength to develop them, vary with the individual.

Ambition is a good thing, but attainment is not its synonym. The world is filled with 22-caliber cartridges trying to explode in 30-30 rifles.

Plans for achievement must be matched with power to carry them through. Demosthenes was one stutterer who became a great orator, but most stutterers have their mouths full when they try to follow conversation, much less lead it.

One-armed men occasionally develop into oarsmen, but most of them can't even keep the boat straight-like for the shore. It is a good rule not to attempt success in a field for which accident or nature has unfitted you.

There will always be superior intellects, because superior progenitors sired them. Generations of careful breeding ought to eventuate in an improved strain. Futurity winners aren't found between the shafts of brick-carts.

Any man is capable of getting out of himself what is in him, but he can't progress further than his gifts will carry him.

Accident will now and then combine circumstances so as to place an individual higher than he deserves, but in the long run Merit, and Merit alone, will determine the outcome; the law of survival is the one immutable law; the strong must rise to their appointed and destined places; the weak must serve those who prove their fitness to command.

The greatest tragedies of an absolute democracy spring from the discontent spread by the sophistries of its demagogues; the unhappiness phase of a civilization founded upon equality is the misconstruction of "equality." It does not mean that any social order can overturn the order of nature; democracy only casts down the walls of unearned privilege; it kicks away the props of inherited prestige; it allows each man to stand for what he is and to have what he can reach—to hold what his strength can master—and to lose what his own gifts cannot maintain. But no democracy will ever be conceived by man which will overthrow the basic laws of the universe—first among which is that of competition, which has prevailed since the cave-man began to test his prowess and to measure it against that of his neighbor. There are big duties and little tasks, offices of direction and of obedience, and there must be big men and small men to perform them.

An army must have its chief, its consulting aids, and its ranks; there must be cog-wheels as well as fly-wheels on every machine—each watch must have its main-spring, each government its supreme head; all that the doctrine of equal rights can hope to accomplish is that the man who is most deserving shall be placed where he should be. Universities cannot upset this principle; they can only multiply and spread in their scope until they develop more of those who are most fitted to stand upon the heights; they can broaden the opportunity, but they cannot put into any mind the elements of initiative or of judgment.

Until the last page of the last volume is written in the Book of Years, Merit alone will rule the earth.

Copyright by Herbert Kaufman.

Operating Room of the Ericsson Telephone Company, Mexico City, Taken a Few Days Before the Revolution.

Telephone Operating Under Artillery Fire in Mexico City

Exchange of Ericsson Telephone Company Operated During Battle in City Until Shells Pierced Walls and Operators Were Obliged to Leave Building Located in Direct Line of Fire—Service Promptly Restored After Cessation of Hostilities

By Helge Rost

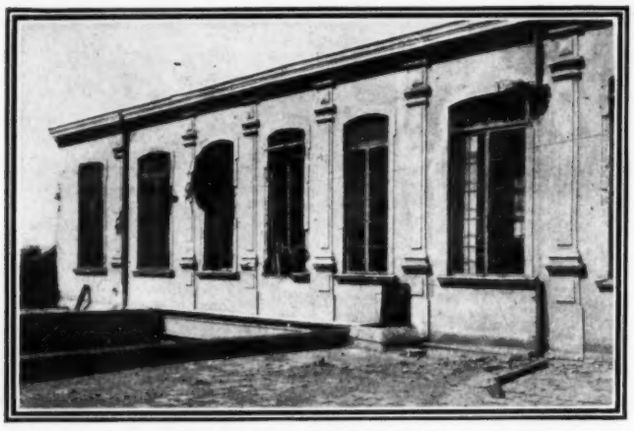
Few if any are the cases, at least on this continent, where a telephone exchange has been rendered inoperative by fire of artillery, machine guns, and Mauser rifles. This was, however, the case with the Ericsson exchange during the Felix Diaz counter-revolution in Mexico City last month.

Many revolutionary movements have taken place in various sections of Mexico during a period of more than two years but never in the capital of the republic. It was therefore a surprise, especially to the writer, upon wakening Sunday morning the ninth of February, to hear that on account of the mutiny in favor of Felix Diaz of the cadets of the military school in Tlalpam, a suburb about ten miles from Mexico City, all the trunk lines of the Ericsson Telephone Co., from the city had been cut during the night. As no message could be sent about the movement, the cadets were able to take the city by surprise. As the early suburban tramcars in the direction of Tlalpam were taken by the cadets for means of quick transportation, they gained their purpose. When the news was conveyed to the officials of the tramway company, they had all car service over the entire Federal district stopped at once, and all cars that could run through were brought to the depots. Thence one event more stirring than the preceding happened in rapid succession as TELEPHONY'S readers may have seen in their daily papers.

Views of the Operating Room After the Battle, Showing Walls Pierced by Shells.

The offices of the Ericsson Telephone Co. happened to be directly in the line of fire between the "Ciudadela" occupied by General Felix Diaz, and the government troops, surrounding it in a wide circle.

The contest between the two combatants commenced Tuesday, the eleventh of February, in the morning. Rapid



Outside View of the Operating Room, Located on Third Floor.

fire guns on the top of the Y. M. C. A. Building and the 6th police station, both occupied by Felixistas, sent a shower of bullets on the government soldiers who had taken positions on the roofs of the houses of the surrounding blocks. As the Madero or government soldiers with several machine guns had taken up positions in the same block where the Ericsson Telephone Company's exchange is situated, the result was that the walls of the operating room, situated on the third floor of the building and raising up over the surrounding houses, were perforated by bullets.

This happened at about 10 o'clock, the busiest hour of the day, and all positions at the board were occupied. The telephone operators, badly frightened by the whistling of bullets and the falling of lime dust all over the operating room, speedily took refuge in the lower parts of the building. The rapid fire guns of the Felixistas, situated in commanding positions, made a clean sweep of the house tops and the government troops in the neighborhood had to withdraw after half an hour of hard fighting. While in other parts of the city, the fighting went on all day, the telephone exchange was not troubled again that day. All the time bullets were singing in the air, as the outposts of the two forces tried to hit one another in case anyone was careless enough to show part of his body around the street corners.

The worst noise over around the exchange building, the most plucky telephone girls went upstairs to see what damage had been done. As nearly every line signal lamp was burning, the subscribers in despair moving their hooks up and down to get urgent connections, several girls returned to their respective switchboards in spite of the danger. In a few minutes, encouraged by this example, nearly the whole force was working at top speed to answer the calls of the impatient subscribers.

To help out the girls male employes, both high and low, were ordered, one behind each girl, to pull out the plugs when the conversations were finished and the girls only busied themselves establishing connections. Thus the company was able to give a splendid service to the whole Federal district while situated between the fighting forces and under the trying circumstances just described.

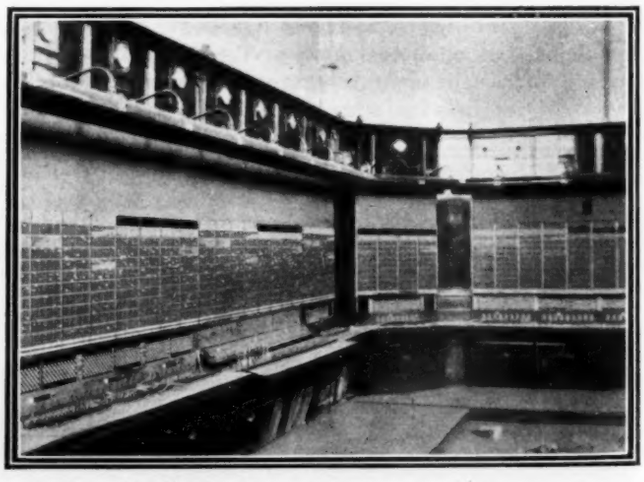
At the beginning of hostilities about 65 operators were busy and several were unable to go to their homes at the end of the day. The company speedily provided food and beds to care for the many who desired to stay in the building. Nearly every day the fighting stopped at nightfall and the inhabitants of the neighborhood swarmed in the streets to obtain provisions from the food stores. Several of the operators took the opportunity and slipped through the outposts but returned early the next morning to their positions before the fighting started again.

One of the girls, the brave Senorita Maria Cuevas, tired after several days of hard work was out a little too late Wednesday morning. While walking from her home close to the office, the firing already having begun, she was wounded in the left leg by a half-inch bullet from an exploding shell. Luckily the bullet passed through the fleshy part without breaking any bones. The same bullet afterward struck a boy who also happened to be in the street. Miss Cuevas was picked up by pickets of the White Cross and the wound dressed. It is hoped that after a while she will be around again enjoying her work as much as ever.

Wednesday night, after nearly 48 hours' of constant work, many of the girls took advantage of the lull in the firing to get out of the line of fire. Only six girls remained in the exchange over night while several of the male employes, previously trained for emergencies, helped out in making connections on the switchboards.

During that night the Federal troops moved closer, placing some heavy guns on the street just outside the doors of the exchange, while other guns were placed on the roof of the National Theater, the exchange being in a straight line between the "Ciudadela" and the theater. As the artillery duel was to commence Thursday morning, the last six girls went through the lines at daybreak, leaving only the male operators in charge of the switchboards.

The first shell struck the top of the exchange, tearing bricks and scattering dust all over the switchboards and then the male operators had to make a speedy exit. It was a wonder that no one was hurt. In rapid succession several shells perforated the walls making their way through the switchboards and some over them and out through the opposite wall, leaving big holes marking their entrance and exit. Of course it was impossible under these circumstances to give any service at all, the risk

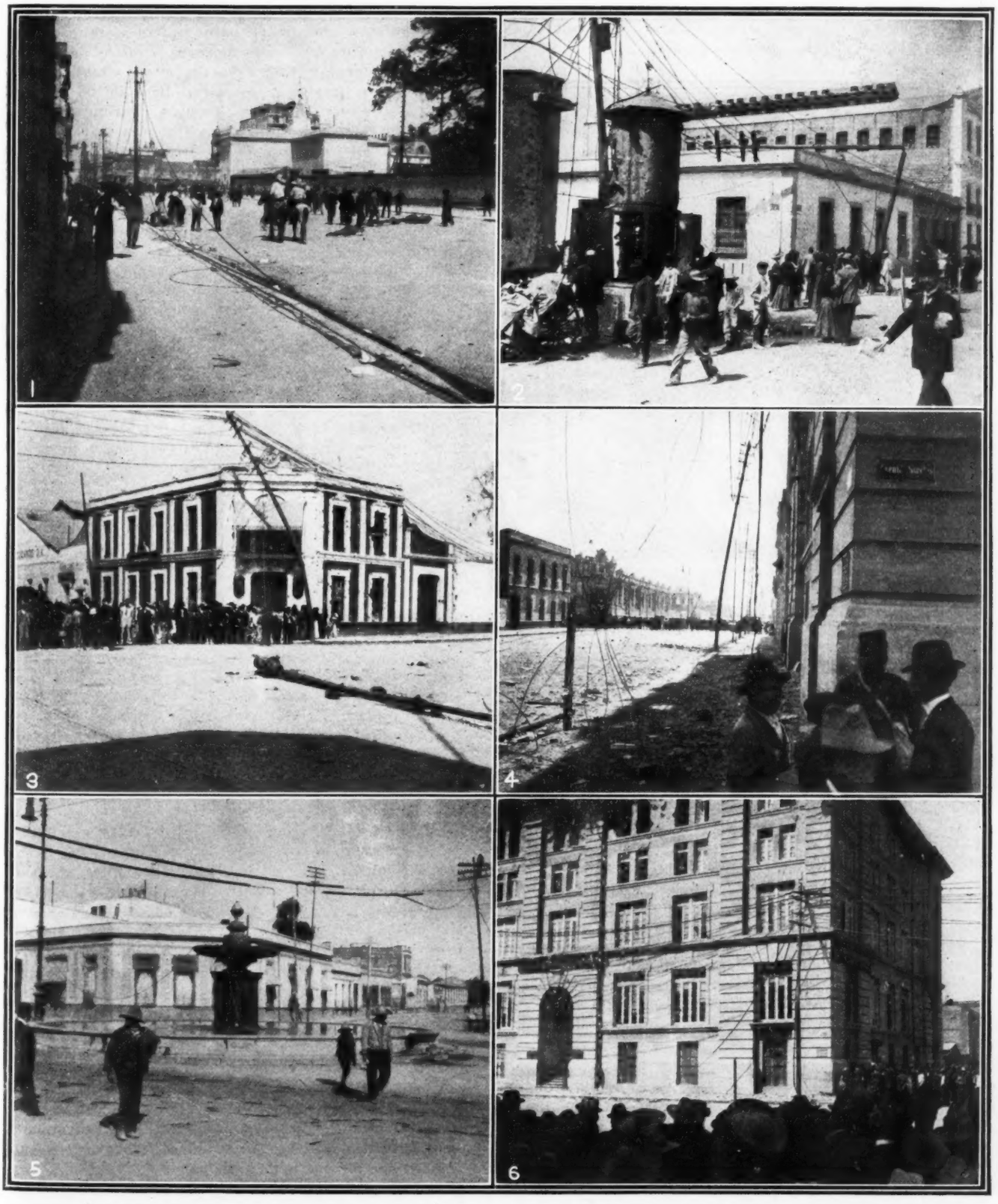


Switchboard Section Struck by Shell and Forced Out of Place.

of losing one's life being too great. Hence service was suspended until the end of the siege, the next Wednesday, February 21.

The service in the central exchange during the siege was supervised by the writer, who, besides being chief engineer of the company, temporarily has charge of the work

Devastation Wrought by Modern Artillery and Small Arms

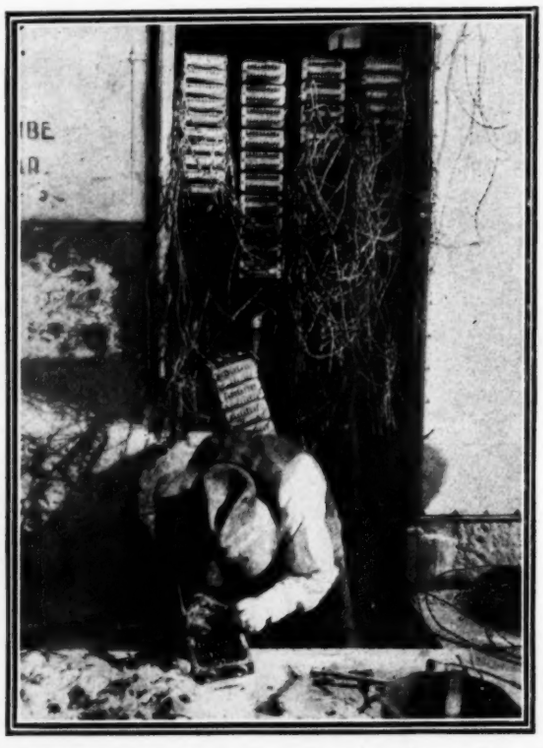


SCENES IN STREETS OF MEXICO CITY SHORTLY AFTER THE BATTLE, SHOWING CONDITIONS OF WIRES.

1. View in Calle Balderas.—2. Transformer of the Mexico Light & Power Co.—3. Scene at the Corner of Ave. Morelos and Calle Balderas.—4. Feeders for Trolley Wires of Electric Railway Shot Down in Calle Balderas. The Ciudadela is Seen in Background with Y. M. C. A. Building on the Corner.—5. Telephone Cables, Arc Circuits and Trolley Wires Damaged in Calle Bucarelli.—6. The Y. M. C. A. Building upon Roof of Which Were located the Felixistas' Rapid Fire Guns.

in the exchange. The operators who so pluckily stuck to their posts most of the time under fire were:

Supervisors Dolores Cerventes, Dolores Perez, Filomena Velasquez, Maria Osorno y Angela Cardenas; operators, Luiza Contreras, Manuela Ortega, Maria Valenzuela, Luz Galindo, Maria Teresa Hernandez, Maria Teresa Rubio,



Cableman Making Repairs to Distributing Box Smashed by Shell.

Isabel Gonzales, Carmen Leon, Gabina Serna, Julieta Rivero, Amalia Contreras, Maria Sousa, Raquel Villagomez, Victoria Rojas, Justina Rosas, Isabel Gonzalez, Conchita de la Pena, Lucia Lazcano, Ana Maria y Carmen Argiielles, Hortensia Lemoine, Nieves Gallardo, Rosario Huerta, Maria Dellgado, Mariana Gonzalez, Maria, Dolores y Francisca Rubio, Raquel Gonzalez, Josefina Sotomayor, Aurelia Perez, Aurora Medina, Maria Najera, Luz Zamora, Concha y Carlota Martinez, Isabel Najera, Leovigilda y Elsa Morales, Maria Martinez, Isabel Ana y Susana Perea, Juana Agilero, Susana Vega, Esperanza Ramfrez, Angela Carreto, Severa Burgos, and Maria Lopez y Soledad Arriaga.

The heroism of the young telephone girls during those days made such an impression among the subscribers, especially the members of the American colony, that Harold Walker, took the initiative to start a subscription for the benefit of the operators who stuck to their posts during the bombardment.

Hostilities ended late Tuesday night, February 18, and the Ericsson officials summoned all the available troublemen and construction gangs within reach and the repair work was promptly started. The first thing was to get a temporary connection from the leads of the Mexico Light & Power Co. in order to provide current to run the motor-generator sets for charging the accumulator batteries which were rather run down. Early in the firing several of the power company's transformers were shot down and short circuited, leaving a great part of the town without either light or power. Thanks to Mr. Walters of the power company, the connection with the power circuit was obtained promptly. In return the telephone company was able to help the power company by supplying some telephone cable as in Calle Balderas its aerial telephone cable was all shot to pieces.

Although the back parts of four sections of the multiple switchboards were rather smashed up and several multiple strips splintered, the switchboard repairs were comparatively easy, owing to the abundance of spare parts. At 4 o'clock Wednesday afternoon, the whole exchange was open again for service. The aerial lines in the foreign colonies spreading out from the high distribution poles were considerably disturbed, especially was that the case where poles happened to be in the firing line. With all the construction and repairing gangs at work, the aerial lines were quickly restored to an operating condition and the subscribers, put out of service by the battle, enjoyed connections from their private houses once more.

The underground system of cables in the center of the town protected the net from much damage and facilitated prompt repair work. As the distributing ten-pair and one-pair lead-covered cables were attached to the flat roofs, many of them in the firing zone were pierced through and through. Owing to the small sizes of the cable, the damage did not amount to very much and little by little the necessary repairs were made.

Considering the damage done both inside and outside, the company was congratulated upon its prompt restoration of the service, which was resumed more promptly than many subscribers believed possible.

Keystone Report for February.

The Keystone Telephone Co., of Philadelphia, has made public its report of earnings and expenses for the month of February and for the two months ended February 28. The figures compare as follows:

REVENUE ACCOUNT.

MONTH OF FEBRUARY.

	1913	1912
Gross earnings	$102,887	$97,103
Operating expenses and taxes	50,375	48,191
Net earnings	$ 52,512	$48,912
Less interest charges	25,203	24,988
Net surplus	$27,309	$23,924

TWO MONTHS ENDED FEBRUARY 28.

	1913	1912
Gross earnings	$206,913	$195,017
Operating expenses and taxes	104,787	97,408
Net earnings	$102,126	$ 97,609
Less interest charges	50,778	50,120
Net surplus	$ 51,348	$ 47,489

Put One Over on Tarte.

Acquaintances of C. E. Tarte, general manager of the Citizens Telephone Co., says the Grand Rapids (Mich.) News, are telling a story at the expense of Mr. Tarte and the advance payment for telephone service controversy.

It seems that the other morning Mr. Tarte boarded a street car, which was so crowded that he had to stand on the step, holding on with both hands.

"Fare, please," said the conductor.

"I can't pay you and hold on at the same time," replied Mr. Tarte.

Stopping the car, the conductor remarked:

"Now step down to the pavement, hand me your fare, and then get on again."

All his acquaintances on the car laughed as Mr. Tarte did so and paid in advance for street car service.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

Missouri Has Utilities Board.

Governor Major, of Missouri, this week signed the public utilities bill, which creates a state board of five members, to regulate the rates and service of all public utility corporations in Missouri.

Appeals from Interconnection Ruling.

An appeal has been taken from the decision of the California Railroad Commission by the Pacific Telephone & Telegraph Co., which has petitioned the Supreme Court of California for a writ of review in the ruling of the commission ordering the establishment, by the Pacific Telephone & Telegraph, of physical connections with the Tehama County Telephone Co. and the the Glenn County Telephone Co.

The Pacific company attacks the findings of the commission on the ground, first, that the commission exceeded its authority in ordering the establishment of any such connection; second, that the public utilities act, giving the commission authority to make such an order, is contrary to the federal constitution and the state constitution in that, it is alleged, it practically amounts to confiscation of property.

Oklahoma Commission Proceedings.

The Apache Telephone Co.. has made application to the Oklahoma commission for permission to increase its rates for services to subscribers. The petition is signed by a large number of the patrons of the company. The rates at present are $1.75 per month for business and $1 for residence service, and the company asks permission to increase the rate 25 cents on each class.

The commission has given a hearing on the complaint of the Fort Supply Telephone & Telegraph Co., of Fort Supply, against the Home Enterprise Telephone Co., of Woodward, and the Pioneer Telephone & Telegraph Co., asking for an adjustment of rates, but has not yet announced its decision in that case.

Features of Indiana Utility Bill.

As stated last week, the Shively-Spencer Utility Commission Act, which has now received the signature of the governor of Indiana and has become a law, follows closely the provisions of the similar statute in Wisconsin. Notable variations and additions are observed, however, some of which are discussed below.

A general counsel is provided, who shall also serve as counsel to the governor. He is to advise the commission in all legal matters and represent that body in any suits to which it may be a party.

The present rights and powers of the Railroad Commission are transferred to the new Public Service Commission and the Railroad Commission is abolished.

Despite recent court decisions to the effect that a commission's rulings shall supersede the provisions of a franchise, it is provided that "nothing in this act contained shall authorize any public utility, during the remainder of the term of any grant or franchise under which it may be acting at the time this act takes effect, to charge for any service, in such grant or franchise contracted, exceeding the maximum rate or rates therefor, if any, that may be fixed in such grant or franchise."

In the matter of fixing the value of the property of any utility the commission must "give weight to the reasonable cost of bringing the property to its then state of efficiency."

It is specifically provided that the depreciation fund "may be expended for new constructions, extensions or additions to the property, or invested."

All rates, tolls and charges filed with the commission, in compliance with the demands of the act, "shall not exceed, without the consent of the commission," the rates in force January 1, 1913.

Complete Control Over Security Issues.

The commission is to have complete authority over the issues of stocks, bonds, notes and certificates of indebtedness by public utility companies. No public utility shall issue any stock or certificate of stock except in consideration of money, or of labor, or of property at its true money value, as found by the commission, or at such premium as may be approved by the commission.

No public utility shall issue any bonds, notes or other evidences of indebtedness except for money, or labor, or property actually received and equal to not less than 75 per cent. of the value thereof. It is provided, however, that any bonds or notes authorized, but not issued, prior to February 1, 1913, bearing more than 4 per cent. interest, may be issued for a price not less than 65 per cent. of par. No bonds or notes, it is further provided, shall be issued to retire or discharge any discounts incurred after February 1, in connection with the issuance of bonds, notes or other certificates of indebtedness to be refunded or discharged.

The indebtedness shall bear reasonable proportion to the total issue of capital stock, due consideration being given to the nature of the business, its credit, future prospects and earnings. Any public utility may, with the approval of the commission, issue securities or evidences of indebtedness payable at periods of not more than twelve months after the date thereof, when necessary for the acquisition of property, the construction of plant or the improvement of service, or for the lawful refunding of its obligations; or, again, for the reimbursement of money spent from the treasury and obtained from the issue of securities within five years next prior to the filing of application with the commission, assuming that the utility kept its accounts in the manner ordered by the commission. Whenever a public utility desires to make such an issue of securities it must file a full statement of its financial condition with the commission, and no issue will be lawful unless it bears the approval of the commission.

Capitalization of Merged Concerns Restricted.

The commission has no power to authorize the capitalization of any franchise or the right to own, operate or enjoy any franchise whatsoever in excess of the amount actually paid to the state or to any subdivision thereof as the consideration for the grant of such franchise. When two or more corporations are merged the combined capitalization shall not exceed the sum of the capital stock at par of the corporations consolidated except for additional sums of cash actually paid out. No contract for consolidation or lease or merger shall be capitalized.

No public utility shall transfer or lease its franchise, works or system to any other person or corporation without the consent of the commission. No public utility shall directly or indirectly acquire the stocks or bonds of any other corporation engaged in a similar business unless authorized to do so by the commission. This, however, does not interfere with any

present holdings of stocks, lawfully acquired, nor with the acquisition by a company holding a majority of stock in another company, buying the balance or minority stock.

When the commission gives its consent, any two or more public utilities furnishing a similar service in the same locality may enter into contracts with each other which will enable them to operate their systems jointly. Upon the consent of three-fourths of the capital stock outstanding, and with the consent of the commission, any public utility may buy or sell or lease its property or business at a price and on terms fixed by the commission.

As to Competition.

After this act takes effect no license, permit or franchise will be granted to any interest to own, operate, manage or control any public utility by any municipality where there is already in operation a public utility engaged in furnishing similar service under an indeterminate license, franchise or permit, except in the event that the commission has declared, after due public hearing, that public convenience and necessity require such a second utility and the resulting competition.

Any existing permit, license or franchise which shall interfere in any way with the existence of a second public utility is declared under the terms of the act to be against public policy and is amended in such manner as to permit the grant of an indeterminate permit to a second utility under the terms of the act. The provisions of the act making it mandatory to obtain an indeterminate permit after due public hearing applies with equal force to municipalities which desire to engage in furnishing public service in competition with one or more of the existing parties.

No license or indeterminate permit shall hereafter be granted or transferred except to a corporation duly organized under the laws of the state of Indiana or to a citizen of the state. Every license or franchise hereafter granted to any public utility shall have the effect of an indeterminate permit, subject to the provisions of the act and subject also to revocation by the commission for cause.

Wisconsin Telephone Measures Killed.

The K. A. Johnson bill, in Wisconsin, framed to repeal that part of the public utilities law which prohibits the duplication of telephone systems unless public convenience and necessity demand, has been indefinitely postponed in the assembly. Farmers' co-operative telephone companies in Columbia county favored the measure. They desire admission to the village of Rio, but refused to come under the physical connection law.

The transportation committee has unfavorably reported the Schnitzler bill prohibiting telephone companies not charging a toll rate on January 1, 1913, from collecting any tolls in the future. The Smart bill to prohibit the collection of any telephone rentals in advance has also been unfavorably reported by the committee.

Would Require Advertisement of Franchises.

Representative Rinehart has introduced House Bill No. 201, into the Illinois legislature, requiring a public hearing and advertisement before the confirmation of public utility franchises.

Telephone Greatest Forest Protection.

That the telephone is one of the biggest factors in fire fighting, was conceded at the second meeting of the Lake States Forest Fire Conference, recently held in Lansing, Mich. Especial attention was attracted to the necessity of telephones in papers read by E. J. Zavitz, O. A. C., Guelph, Ontario, who is in the dominion service as forester; William B. Piper, U. S. forest supervisor in northeastern Michigan, and William T. Cox, state forester, Minnesota. It was contended in discussions that followed the reading of these papers that the telephone service had more to do with quick action and alarming neighbors than all the watch towers, firebreaks or other measures that could be adopted.

It was declared by Michigan officials that had the wooded areas been properly protected by adequate telephone service, the disastrous fire of 1908 might have been perhaps avoided or confined to an area where but a small loss would have been experienced.

One of the strongest advocates of telephones and extensions of telephone lines in northern Michigan was Charles F. Hickok, chief warden of the Michigan Hardwood Manufacturers' Association, of Gaylord, Mich., which maintains its own protective department. Mr. Hickok, who has had a large experience in forest fire fighting, declared that the telephone would do the work of scores of patrolmen for the reason that a hunter, farmer, rural mail carrier or anyone who found fires too large to be extinguished personally, could by a single telephone call summon scores of men to his assistance.

"Don't Write—Talk!"

The Corsicana Telephone Co., of Corsicana, Texas, W. C. Dillon, manager, is distributing blotters among its subscribers and possible subscribers, bearing the injunction, "Don't write—talk!" Below this large-type caption is the following:

"Increased toll facilities. New lines to Dallas, Ft. Worth, Waco, Austin and many other points; 8,500 telephones in the city of Dallas, through the new automatic exchange, at your service over new full metallic copper toll circuits.

"Corsicana subscribers to our service have access to 2,100 telephones in Navarro county. All service of the highest grade. Save time and money by use of Independent service."

An Attractive Illustration—to Stimulate Telephone Demand.

At the left end of the blotter is the pen and ink drawing, here reproduced, with the legend below: "We almost feel the touch of the hand, we see the eyes, the smile, the personality—that is the triumph of the telephone; that is transmission." The engraving, by the way, is one which the Kellogg Switchboard & Supply Co. puts out

The blotter is a striking reminder of the fact that telephone service is a necessity of modern life, and that the Corsicana company is prepared to give service of an exceptional quality. This is good advertising.

Florida Association Declares for State Regulation

Resolution Adopted During Two-Day Session, at Tampa, Endorses Principle of Control by Railroad Commission and Calls upon Legislature to Provide Funds Sufficient to Permit Effective Work—All Former Officers of Association Re-elected

At its annual convention, held in Tampa, on Thursday and Friday, last week, the Florida Telephone Association went on record endorsing the principle of state regulation of the telephone business and petitioned the legislature to appropriate sufficient funds to enable the Railroad Commission to properly carry on the work. This was embodied in the form of a resolution, as follows:

"WHEREAS, the Florida Telephone Association recognizes that regulation by commission is the wise, proper and correct method of adjusting differences between subscribers and telephone companies, and

WHEREAS, the railroad commissioners of the state of Florida are overworked by the railroad matters constantly before them, and

WHEREAS, the telephone and telegraph business was and is an additional burden upon their time, for which they receive no recompense, and which they have neither time, means or facilities to properly investigate, and

WHEREAS, the question of equal, fair and just rates and methods of service are intricate problems which we ourselves find difficult of proper solution;

NOW, THEREFORE, be it resolved that the Florida Telephone Association, of Florida, recommend to the legislature of Florida, that a sufficient amount of money be appropriated to enable the Railroad Commission to employ the services of a competent, efficient telephone engineer to investigate telephone conditions in order that a fair ruling may be had between the people and the telephone companies, as to rates and efficient service."

In discussing the resolution, Mr. Scott said that the commission, though having the power for two years, had been unable, for lack of funds, to employ a competent man to undertake the work. The members of the association, approving the position of the state that regulation and oversight into the matters are desirable, think the legislature ought to provide means for the proper consideration of the problems. The telephone companies, in paying a tax of 12½ cents a telephone, are supplying ample funds, said Mr. Scott, to cover the cost.

After the passage of the resolution it was voted to print it and to send a copy to each telephone company in the state and to every member of the state legislature. In sending out the resolution to all of the companies, some of which are not members of the association, the secretary will write an explanatory letter, telling of the situation and advising the use of proper tact in approaching legislators.

It was also decided to print 100 copies of the report of the committee on rates for distribution among members of the association.

Another resolution was passed increasing the membership dues. Heretofore the dues have been $3 annually. By the resolution passed yesterday, this is now made the minimum amount and provision is made that all exchanges in which there are over 300 telephones in use shall pay dues at the rate of one cent per telephone.

On motion of George H. Fernald, of Sanford, a general rising vote of thanks was given the telephone men of Tampa, the Peninsular Telephone Co., the city officials, the newspapers, the Board of Trade and all other persons or interests who had helped to make the convention a success.

Also on motion of Mr. Fernald the rules were suspended in the election of officers and Secretary-Treasurer Voyle was instructed to cast the vote of the entire convention in favor of the former officials. These are as follows: President, W. G. Brorein, Tampa; vice-president, Dr. L. W. Moor, Tallahassee; secretary-treasurer, E. E. Voyle, Gainesville.

On motion President Brorein was authorized to appoint such executive, legislative or other committees as he saw fit.

The banquet at El Pasaje restaurant was a pleasant feature of the convention. H. A. Grant, of Jacksonville, was toastmaster.

Mayor McKay told of the growth of Tampa and pre-

Florida Telephone Association Gathered in Executive Session in Tampa.

dicted that it would be before long the best city on the gulf. He recounted what is being done to make Tampa the great city that it is destined to be.

F. C. Bowyer, of the Board of Trade, was listed to talk on the "infancy of the telephone business in Tampa." Mr. Bowyer ran the Bell office here in 1899 and told some of his experiences.

Mr. Fernald said it was the duty of the telephone company to render the best possible public service.

Dr. P. W. Butler of Leesburg spoke on "Currents." Dr. Butler's kindly wit and pleasant style made a great hit.

G. E. Mabry spoke of "The Municipality," and W. B. Powell on "All Lines Lead to Tampa." W. H. Adkin of Atlanta, general contract agent for the Southern Bell Company, was the last speaker.

Photographs were taken of the convention in session and also of the members gathered at the banquet. These are here reproduced and show a large and interested assemblage,

President Brorein made a few closing remarks in which he declared that it had been a great pleasure for the city of Tampa to entertain the telephone men and that it had been a great pleasure to him to see them meet here. He declared that the city officials, who were not present, also were happy to have had the meeting in Tampa.

Members of the Florida Association Celebrate a Good Year—and One of Progress.

Mr. Brorein spoke of the humble beginning of the Florida association seven years ago, and of its rapid growth in influence and membership. He declared this organization to have been a pioneer along right lines, stating that some of the propositions first advocated by the Florida association have since been taken up by the National association in an effective manner.

The meeting was declared a great success and it is confidently expected that practical benefit will result from it throughout the coming years.

Proceedings of North Dakota Telephone Convention

Meeting at Valley City Last Week One Replete With Discussions of Practical Subjects—Attendance Was Large and Close Attention Was Given—Twenty New Members Reported During Year—Name Changed to North Dakota Telephone Association

The seventh annual convention of the North Dakota Independent Telephone Association was called to order by the president at 11 a. m., March 11, at Valley City, N. D. The city officials kindly tendered the use of the City Hall for the meetings, affording excellent quarters for the meetings and plenty of room for all the manufacturers 'exhibits.

The date of the convention conflicted with the dates of others of the same general nature, and this cut down somewhat the list of exhibitors. However, there were several present with good displays, among them being: Stromberg Carlson Telephone Mfg. Co.; French Battery & Carbon Co.; Duplex Metals Co.; Western Electric Co., and Dean Electric Co., all with exhibits. Frank B. Cook, Minnesota Wood Preserving & Stain Co., Kellogg Switchboard & Supply Co., and Northwestern Electric Equipment Co. had representatives present. Twenty operating telephone companies were registered.

President Coar introduced Mayor Platou, of Valley City, who gave the association a cordial welcome. A response was ably given by Hon. John Carmody, of Hillsboro, who thanked the mayor and gave a brief review of the telephone industry in North Dakota. Mr. Carmody called especial attention to the good management of telephone interests existing at the present time, citing the meeting called by the Railroad Commission, of North Dakota, in December, 1912, at which meeting no complaints worth mentioning were filed by dissatisfied subscribers throughout the state.

The secretary reported a very healthy condition of the association financially, showing that about 20 new

companies had been added to the list during the year and reporting a more general interest in association work. The papers on the program were called for and each one was fully discussed, during the balance of the day and the day following. One of these, on legislation, was read by L. D. Richardson, who briefly reviewed several measures which came before the state legislature during the last session. and which were looked after by members of the association. Most of these, Mr. Richardson said, would have been exceedingly detrimental to the interest of the telephone industry had they been allowed to pass.

"The matter of legislation is of vital interest to every company operating within the state," said Mr. Richardson, "not only to the larger companies, but to the small ones as well, and it is one of the functions of this organization to see that our interests are protected."

Other papers read covered a variety of practical problems. These will appear from time to time in subsequent issues of TELEPHONY.

The Commercial Club, of Valley City, invited the association to lunch on Wednesday, March 12, when a liberal repast was served and several of the business men of the town were presented to the telephone men.

In the executive session the question of changing the name of the association, cutting out the word "Independent" was discussed. It was urged that the purposes of the association are merely to bring together all telephone men throughout the state and not to promote Independent companies exclusively, and that, therefore, the word should be dispensed with, as not being wholly representative. Upon vote the name of the association was changed to the North Dakota Telephone Association.

As stated in TELEPHONY last week, C. H. Coar was reelected president and L. D. Richardson, vice-president, for the ensuing year. R. P. Baird was elected secretary taking the place of L. C. Lane, of Kensal, who had resigned from this position owing to the fact that he had sold his telephone interests in this state.

The resolutions committee presented a resolution thanking the mayor and citizens of Valley City, expressing their appreciation of the cordial reception extended and in particular the hospitality of the Commercial Club.

The executive committee named includes the following: L. D. Richardson, Fargo; Frank Bracelyn, Fargo; W. T. Craswell, Valley City; F. L. Shuman, Bismarck; J. E. Lewis, Hettinger; A. J. McInnes, Dazey; M. G. Stokesberry, Grand Forks; C. W. Reese, Grand Forks; C. H. Coar, Minot; R. L. Welliver, Williston; J. P. Smith, Beach; L. S. Craswell, Carrington; J. M. O'Keefe, Cavalier; Thomas Gilbertson, Lisbon.

This committee met in special session and named Fargo as the place of the next convention, which is to be held during March, 1914. It also outlined a campaign for bringing in new members to the association.

Fifth District Illinois Association Meets.

The first quarterly meeting of the fifth district of Illinois association of Independent telephone operators has just been held in the Jefferson Hotel, Peoria. Geo. H. Glass, of Pekin, district president, presided and the attendance was large and enthusiastic.

The entire district was well represented and a number of interesting talks were made by various Independents. E. D. Glandon, of Pittsfield, who represented the Toll Clearing Association at this meeting, made a strong talk for that organization. At the conclusion of his address he invited those present to ask any questions they might care to in reference to the Clearing association. Many of those in attendance availed themselves of the opportunity and Mr. Glandon, in answering the questions, made points clear to the minds of many on the question of toll clearances.

State Secretary B. F. Baker, of Leroy, who spoke on the state association outlook for 1913, made a most optimistic address in which he commented strongly on the rapid strides of the Independent movement in the last few years.

C. B. Cheadle, of Joliet, spoke on unity and its telephone value. He made a strong plea for unity and, in a most forceful manner, pointed out the value of unity from a telephone standpoint.

Others who spoke were F. M. Ashe, of Kewanee; T. C. Ainsworth, of Bloomington; Frank Weber, of Pekin; and E. S. Sterrett, of Henry. Resolutions of sorrow were adopted relative to the death of one of the district members, J. H. Drawyer, of Bradford.

The meeting was most successful. In connection with it, a meeting of about 50 operators was held, at which the operators' society, which was started at the state convention, was made permanent. Miss M. N. Robinson, of Aurora, instructed the operators along the lines of toll operating and code work.

Papers before the operators' meeting were given by Miss Bertha Kliene, of Henry; Mrs. Nettie Tate, of Pekin; and Frank Weber, of Pekin.

In the evening a sumptuous banquet was served in the Palm Room, of the Jefferson. J. W. Barrett, of Pekin, state president, who officiated as toastmaster, introduced the speakers in a happy manner and toasts were responded to by B. F. Baker, C. B. Cheadle, George H. Crandall, George Glass and E. S. Sterrett. The affair was in charge of E. T. Teece, district secretary.

A Montana Pioneer Calls on Telephony.

TELEPHONY had a pleasant call from J. N. Tolman, of the Clark Fork Farmers' Telephone Co., of Belfry, Mont., last week. Mr. Tolman is a big ranch owner in Montana, near the Wyoming line, who woke up one morning to find himself, much to his own surprise, in the telephone business.

He went to Montana when 19 years old and got a job as a "cow puncher" on a big range. Those were the early days when the few people in that section had to ride 65 miles to get their mail, and freight in their supplies the same distance. He learned the cattle business, was made foreman of the ranch and eventually became owner of the same establishment in which he started as a cowboy. Today he owns 5,000 acres, about 10,000 cattle and 12,000 sheep.

Naturally he soon found it necessary to run a telephone line to his camps and, as the country was settled, other lines were run to the homes of his neighbors. Almost before he knew it he was in the telephone business.

Last week he came to Chicago to purchase some equipment required by his growing exchange in the far west and, being a subscriber to TELEPHONY, paid this office a call, which was much enjoyed.

"When I left home I made up my mind if I saw any place I liked better than Montana I'd locate there," said Mr. Tolman, "but after looking around I've decided that Montana is good enough for me."

$1,000,000 for Edmonton Telephones.

The city of Edmonton, Alberta, will spend in the neighborhood of $1,000,000 on extension work during 1913, the greater part of which will be cable work. It is the intention of this municipal department to build much underground conduit in both South Edmonton and North Edmonton, and there will also be considerable underground and aerial cable work. W. R. Griffith is superintendent of the department.

Another Letter

The Morgan Epistle—The New York Side of It

By J. C. Kelsey

There are always two sides to a question. The public, generally, believes there is a money trust. Thomas Lawson loudly says there is one, and Arthur Stillwell, who built two railroads, will swear there is one.

The farmer, preacher and laborer believe every word of it. And they constitute a fearful majority, too. That is why the Pujo Committee got busy. They wanted to know the whole truth, to see if the public belief is well founded.

This is a queer age, anyway. It is the age of publicity. Never before in the history of the world did the pitiless rays of publicity become so effective. And never before were they feared so generally by the interests so attacked.

Witness today, the frenzy in some cities, already rejecting gifts from the head of Sears, Roebuck & Co. All the good works of this man will be utterly forgotten, and every future action discredited, because the papers took up the story that the underpaid girls were assessed for decent drinking water!

Dewey took Manilla Bay, a magnificent achievement, but the newspapers distorted one simple act, and a popular idol came tumbling down from a dizzy height.

Morgan & Co. seem to be bearing the brunt of the money trust investigation. They were invited to express themselves by letter, presenting their views upon the question of concentration and control of money and credit.

In their letter, which is a most remarkable one too, they fire a most effective broadside at the very start. They accuse the present banking system:

"Such ills as are existent are the outcome of a clumsy and outworn banking system, rather than of the schemes of men."

This charge is eminently correct. Our banking system makes New York the guardian of our national surplus. This money is loaned to New York banks and subject, at all times, to instant call.

You can practically go up to the window and get your money just as the local bank does. If you did not get your money, you would be alarmed, tell your friends, and another good bank would soon be ruined. And if the country banks would fail to get their money from New York when they needed it to pay you your money, there would be trouble all along the line.

So New York banks have to loan it to gamblers and speculators, who can pay it back in a single hour or day. There is little or no chance of business being encouraged, except that of speculation.

The whole system reminds one of a military powder mine, with numbers of fuses, no man knowing which fuse is lighted.

Morgan & Co. suggest that symptoms do not deserve legislation—that the disease itself should be diagnosed and then cured.

We all know that it is better to get at the source of our pains than to get the morphine habit in the act of deadening them.

And then they make out a case of justification of New York as a financial center—that economic laws seem to create one city as a financial center, such as London, Paris, Berlin, etc.

The next point is that money and credit are subject to the laws of supply and demand, just as cotton, grain and steel, but that money and credit are distinctive, since they can be sent to all the world by telegraph.

And further, the letter claims that history reveals no group of men ever succeeding in overturning economic laws.

How this does apply to our own field of endeavor—the Independent telephone! My belief in the ultimate success of Independent, or open field, telephony has always been based on an economic law—a local issue.

The universal control of telephones will never be accomplished, because a group of men or financiers are flying in the face of an economic law. The theory of a universal telephone system violates also the very heart of the Sherman act—that the strong localities shall carry the weak.

We insist that the weak spots be abandoned—that the Universal telephone will be ruined if they are not.

John D. Rockefeller thought he was founding a new school of economics until he ran into the supreme court. They ruled against his idea, although they merely anticipated what nature would have done later.

The panic of 1907 is popularly supposed to be due to the machinations of certain powerful men.

This is vigorously denied, and justified on the ground that the men who have the power "to create, avert and compose panics" are the ones who will suffer most by the shrinkage in security values.

Here is where the public has some reason to doubt. The group of men who apparently lose by this terrible shrinkage may be bent upon the ruin of an undesirable clique, or expect to buy stocks at the ruin price, and profit on the inevitable upgrade.

If a man owns stocks and bonds outright, what does he really care whether they depreciate or not—if but temporarily?

I think the American public will have a hard time to digest this justification.

It is called an "economic impossibility" for a small group of men to obtain entire mastery over the financial machinery of one hundred million people.

One hundred and eighty men serve in 132 corporations where resources aggregate $25,000,000,000. Some people have the idea that this amount in cash or liquid assets, subject to the selfish use of individuals. Even if you hadn't this idea, it will be hard to convince you that 180 men could not control 132 corporations.

Yet one must look into the human nature side of the case. You could not get 180 men to act in perfect harmony, even if you held a death sentence over their heads.

Directors do not cut much ice, anyway. One corporation in Chicago has a president who does not remember some of his directors from one month to the next. It is easily seen that they can not be very important, and practically have no voice in the matter.

I believe one master mind usually controls in every corporation.

We are told that New York is losing rather than gaining

in financial strength. In 1900 the New York banks represented 23.2 per cent. of the banking resources, while today they represent 18.9 per cent. It is a plain fact that local banks are growing in numbers.

The letter vigorously denies that local or interior banks withhold money from local customers for agricultural and mercantile operations, during the autumn season.

It is charged the interest on call loans is likely to be high in the Fall. And it offers too much temptation to loan money on stock exchange collateral instead of loaning it to honest farmers and merchants.

It is shown that New York banks last fall loaned $80,000,000 for crop-moving purposes. So you see, it gets back to the local banker. It is he who is to blame, if you get down to brass tacks.

I hardly see how you can legislate against cupidity. New York is not to blame because it offers your local banker something better than he can get at home. The laws will have to begin at the bottom—have each local bank limited in its loans outside of its own locality.

If a local banker chooses to neglect his local customers, who really own the money, who can really be blamed but the local banker? Of course, eliminating the effect of the present banking law, which seems to force the local banker to do just what the public seems to object to.

The demand for larger banks has been brought about by large financial deals, the Union Pacific deal alone requiring $126,000,000.

It is claimed that the largest bank in New York is but three-fifths the size of the biggest English bank, one-fourth that of the French bank and one-fifth of the German bank.

And a new idea is that American banks have not kept pace with the development of American business. And that bankers, since 1907, have learned to hang together, because they could not rely upon a strong and elastic banking system.

It is this co-operation or hanging together that the public suspects—that these groups can "prevent competition with the enterprises in which they are interested, to the detriment of interstate commerce and of the general public."

The letter flatly says that no responsible and deserving individual firm or corporation has been unable to secure ample credit. Also that bankers are besought to serve as directors. Besides, it is a good thing for a banker to keep his eye on the policy of the company and to protect the interests of the investors in the securities of that company.

The letter reveals the responsibility of the banker. He makes expert investigations for the benefit of thousands of investors who have no way of finding out for themselves.

The New York interests protest against the sale of securities at public auction—that such a course would fail —first, because no banking authority would vouch for the security; second, the proverbially timid investor would not bid at all in stressful times.

Further, just as you need a physician in your daily life, so great enterprises need great financial diagnosticians, too. This great point is brought out, that the success of any enterprise depends largely upon the ability and zeal of its officers.

Any attempt on the part of directors to work toward their own personal ends would either ruin the business or result in the prompt resignation of such officers, "if they were men of character."

The next part of the letter deals with the question of private banks. The point is made that private banks are more impregnable than an incorporated bank, that an incorporated bank can but call upon its stockholders for double liability. But in a private bank, you find the liabilities unlimited upon the owners of the bank.

It is at least the experience of Chicago that the private bankers who fail, usually have nothing left but a suit of clothes and a bunch of debts.

It seems to me that the defense of the private bank is going to be a difficult one. There has ever been a cry against the private bank upon the part of the incorporated banks.

Only last year, when the Illinois bankers came to vote upon the question of compelling private banks to submit to state supervision, the incorporated banks were too cowardly to vote.

It gets back to the old fearful cry of "hurting business."

There will never be much reform as long as "hurting business" is the great American fear. The grocer, drygoods man and all vote to retain saloons and brothels simply because it may temporarily hurt their business.

Getting back to private banks, it may be cheerfully said that no bank is stronger than the banker, whether private or incorporated.

There never was any occupation that so clearly depends upon the wisdom, foolishness, cupidity or liberality of the banker.

It strikes me that banking is an enterprise that depends entirely upon human judgment, and can not be hampered by laws automatically governing the business.

The letter closes with full recognition of the force of public opinion. Morgan & Company can not see how weak or evil hands can last long, because the public, who are the depositors, are the ones who entrust or distrust bankers.

Past history shows that the slightest suspicion of a bank has caused a run of withdrawals which put it out of business.

They point out that Congress could fall in evil hands. Almost everything depends upon the instinct and force of public opinion.

Finally, they express the belief that a scientific banking system, firmly established, will automatically correct almost all the present objectionable features, and, further, eliminate the periodical financials panics.

Usually, talk about banks and money is unusually dry—I can't explain it. But there is no use denying that a great popular suspicion exists that the New York crowd is hogging the deal.

I want to repeat that no man ever really profited in the New York financial life. Very few sets of human nerves and muscles have ever been designed to stand the stress. Really, the whole game is not worth the candle.

And also, do not forget that we human beings are in the wave of an evolution which will make the world better even against our wishes!

MORAL: There are two sides to every issue.

A Quartet of Men Prominent in the Telephone Field

E. T. TEECE, district manager for the Inter-State Independent Telephone & Telegraph Co., with headquarters at Peoria, Ill., was born in Dudley, England, April 22, 1882, coming to this country in 1883. He is a high school graduate, completed a literary course at Knox College, is a graduate of Brown's Business College and an electrical correspondence course. He is a member of the Peoria Association of Commerce and the Peoria Merchants' Association, of the K. P. and the Red Men. He was connected for some years with a branch plant of the U. S. Steel Co., being yard superintendent when he resigned. As publicity man in the theatrical and amusement business, he has traveled extensively all over this country and the British Isles. In August, 1908, he became bookkeeper for the Inter-State, was made manager in 1910 and district manager in 1912. In two years he increased the toll business over 50 per cent. He has been especially active in promoting telephone association work, both state and district. Mr. Teece is a magazine writer and special contributor to the press.

FREDERICK GREER, president of the Harvard Electric Co., Chicago, was born in Tombstone, Arizona, September 6, 1880. His education was obtained in the common and high schools of Chicago. In 1897 he organized the Harvard Electric Co., manufacturing lightning arresters for telephone and telegraph companies, as well as a very complete line of telephone specialties. Mr. Greer has also gone into the automobile line, having organized the Greer Motor Car Co., in Chicago, in 1900. He was elected president of this concern at its inception and has since continuously held that office. He has been prominent to a considerable degree in civic affairs, having been appointed a member of the Cook County Civil Service Commission in March, 1911. In December, of the same year, he was elected president of the commission and was re-elected its president for the year 1913. He is a member of several clubs and social organizations. With his dual line of telephone specialties, and automobiles, Mr. Greer may be properly said to be very closely affiliated with the telephone industry.

W. F. GOODRICH, of La Crosse, Wis., is secretary, treasurer and manager of the La Crosse Telephone Co., and president and manager of the La Crosse Inter-Urban Telephone Co. Prominent in every state and national convention for the past ten years, he has served as a director of the National association and is now treasurer of the Wisconsin association and chairman of the accounting committee. He was born, October 9, 1871, in West Salem, Wis., removing to Wausau at the age of 10. He attended St. Johns Military Academy, at Delafield, Wis., until June, 1888. In August of that year he went to La Crosse for the J. S. Medary Saddlery Co., being successively clerk, bookkeeper and secretary, followed by five years' traveling for the house. In May, 1902, he resigned to take his present position with the La Crosse Telephone Co. He re-financed the company and rebuilt the plant, making it modern throughout. He was elected to office in the Inter-Urban company in June, 1910. He is a member of the La Crosse Club, a director of the Board of Trade and a U. C. T.

HARRY MILES, general manager of the Benton Independent Telephone Co., Prosser, Wash., was born in Knoxville, Tenn., October 23, 1874. He received his education in the grade and high schools and, in 1891, went to work for the Iowa Telephone Co., at Burlington, Iowa, as trouble man and manager. He remained there two years, when he was transferred to Fairfield, Ill., as manager. The next three years were spent at Guthrie, Okla., as manager of the telephone plant of the Pioneer Telephone & Telegraph Co. there. The next year he was in the equipment department of the Denver (Colorado) Telephone Co. The three years following were spent with the Bell Telephone Co., of Missouri, at St. Louis, on P. B. X. installation, and as inspector over wiremen, and in the succeeding two years he was rebuilding and managing the plant at Eagle Grove, Iowa. In 1908 he went to Prosser, Wash., where he built the system of the Benton Independent Telephone Co., in Prosser and Grandview, continuing since as its general manager. He is a K. P., L. O. O. M. and Yeoman.

Increasing the Efficiency of Telephone Traffic Methods

Conclusion of Lecture Delivered at the Annual Convention of the National Independent Telephone Association by Members of the Telephone Service Association—Toll Operating Methods and Records Which Have Produced Beneficial Results

By W. S. Vivian and H. D. Stroud

The chart, Fig. 4, covers a period of six months with the exception of office No. 5. From it may be obtained an idea of how the percentage of lost calls in different size exchanges will vary during a period of a year and a half.

On the other side of the chart the analysis of unfinished messages, are the causes for the lost calls. It may be seen at a glance that by keeping a simple record of this sort, you will know just where to put on the pressure. You know where you can begin to eliminate lost calls, because you are getting it boiled right down to the essential elements that enter into the cause for the lost calls.

The first column of the chart (Fig. 4) shows ND, U, UD, NH and CF (absent, not expected today; out, expected at ——; out, don't know when will return; not there; and can not locate. These originate from causes largely beyond the control of the manager. A few of them are within his control and he can improve them.

Improvement of this class largely lies with the operator herself after becoming familiar with the people. The smallest town shows the lowest percentage. The next size town does not exhibit the same indication. There are probably reasons which account for it and those might be brought out in the discussion—why the second town of 2,757 shows in the analysis of unfinished messages, a higher percentage under the first classification than the larger towns; that is, the classification ND (out, not expected today), U (out, return at some predetermined time), UD (out, don't know that will return), NH (not here), and CF (cannot find).

Logically the smaller towns should have the lower percentage, because in the smaller town the operator is in personal contact with the people; has personal knowledge of their whereabouts. I think you will agree with me that it is true in a small town that everybody knows everybody else's business. If John Jones is not at his office or his home, perhaps an operator knows about where she could find him.

The NF (no telephone listed) and DS (discontinued) lost calls result from causes that perhaps the manager has control over and perhaps not. Where the called party has no telephone or the telephone has been taken out, if you were the manager and saw those 42 unfinished messages in November and in January 68, you would have a pretty good hunch that you were in bad. It would be up to you to find out why your telephones were coming out, why you are getting so many calls for people who do not have your telephones.

I was very much surprised in gathering this data for Chicago. In a city of this size, with our present comparatively small development, we have materially improved conditions in that respect. That is, in the total lost calls. A year ago they were 25 per cent.; this year they are 14 per cent., and they have come down almost on a gradual curve. It did take one jump from 25 to 20. From that point on it has come down gradually, because we have realized the extraordinary conditions under which we are operating and the necessity for a very high degree of efficiency in the matter of preventing lost calls.

The next classification is the DA (don't answer). When we consider these things seriously we do not see the necessity for that perhaps, even although we have this report before us. Suppose in the next month the DA calls in the first line, Exchange No. 1, population 1,100, should jump up to 90 or 100. That would be a sort of an alarm signal to you to get busy and find out what is the cause for it. And so it is in the comparison of all of your reports from month to month.

You are guided in the action you take as a result of studying these reports. The whole purpose of this work, that must be carried in the mind all the time, is to show you it is a guide to the efficiency of your plant from the long distance standpoint, and you must take some action on these reports or they do not do you any good. They are rather wasted energy unless you do. If you file them away for future reference, you will find that they themselves represent about one per cent. efficiency, if that.

On the "don't answer" reports there is a remedy in a great many cases, although it might not appear on the face of it that the manager could do much to make people answer their telephones. It is a fact that the telephone is often located wherever the installer chances to put it, not where people might want it, or where it should be located from a logical standpoint. The extension bells and extension telephones have played an important part in the matter of delivering traffic.

For instance, the Board of Trade calls to a little town where the manager of the place is always out in the elevator. He had a telephone in his office and we lost a great many calls that were delivered over the Bell line, because the Bell had an extension telephone in the elvator. The hunch there was to install an extension bell or something so that he would have knowledge when these calls were made for him.

The OD (out of order) reports give a clue to the condition of maintenance. If these "out of orders" are high on manager's long distance calls, they are high on his local calls, probably affecting the local calls to a much greater degree than the long distance calls.

The next classification is NC (no circuit). These may be

	MESSAGES										ANALYSIS OF UNFINISHED MESSAGES																	
Office	Population	Offered	Finished	Per cent.	Unfinished	Per cent.	Revived	Per cent.	Lost	Per cent.	ND U UD NH CF	Per cent.	NF DS	Per cent.	DA	Per cent.	OD	Per cent.	NC	Per cent.	BY	Per cent.	Miscellaneous	Per cent.				
1	1,100	2,164	1,829	85	335	15	63	3	272	12	111	5	42	2	71	3	36	1.5	7	.1	2	...	73	3				
2	2,757	9,622	8,077	84	1,545	16	196	2	1,349	14	717	7.4	279	3	332	3.5	95	.1	7	.1	2	...	113	1				
3	4,000	6,634	5,706	86	928	14	188	3	740	11	397	6	232	3.5	148	2.2	78	1.2	2	...	4	.1	67	1				
4	10,000	17,093	14,532	85	2,561	15	446	2.6	2,115	12.4	998	5.9	675	3.9	598	3.6	102	.6	43	.2	30	.2	115	.6				
5 (5 mo.)	30,000	29,094	23,366	80	5,728	20	797	2.7	4,931	17.3	2,302	7.9	1,404	4.9	1,295	4.4	223	.7	85	.5	38	.2	381	1.4				
6	50,000	30,916	26,795	87	4,121	13	840	2.7	3,281	10.3	1,308	4.2	949	.3	480	1.5	173	.5	83	.1	10	...	328	1	Lost			
7	115,000	94,500	77,858	82	18,642	18	1,361	1.4	17,281	16.6	7,560	8	4,025	4.2	3,507	3.7	802	.8	177	.15	75	.05	187	.1	Lost			
											(UN 948 1 per cent.)																

Fig. 4. Message Record and Its Analysis.

due to the fact that the circuits are either overloaded, possibly in some cases under this analysis "out of order," or that the circuit layouts are not right, as Mr. Vivian's first example showed. There are three circuits which are carrying traffic between two points. One circuit is carrying over 50 per cent. more than the others. One is carrying a fair load and the other is carrying an underload and one is overloaded. If those three circuits could be perfectly balanced, you would have a fair load for the three circuits and the NC reports would be lower. Consequently, your opposition, if you have it, is not getting the business. You are getting all the business, or a fair percentage, that is handed to you.

The last classification is the By (busy) reports. How can those be affected? How can we eliminate the busy condition? Naturally, by tying up on an individual telephone. We will find out that the busy long distance reports will center in probably 2 per cent. of the telephones. You have a condition there that is up to you to remedy. The matter of eliminating the busy condition is a question of whether that class of business is enough to warrant an additional line, a free toll terminal, or a toll terminal of any sort. It is a question of figuring dollars against dollars.

Finally in the analysis of lost calls is the miscellaneous column. They may be due to a great many different causes, as for instance, inability to get the manager, manager's O. K., and no toll, in fact all minor questions that may come up which do not belong to the other causes.

MR. VIVIAN.

Office No. 7 on the chart, Fig. 4, shows 17,000 lost messages. Suppose an average of 20 cents per message is taken as the value. That immediately suggests that $3,500 is lost there, does it not? If we begin to look at these tickets as dollars and cents, it suggests something to us of $3,500.

I have a letter from one of the large companies of the Middle West, wherein my attention is called to the fact that they lost 18 per cent. of their business in a certain large town. Immediately, as soon as that fact became known, they put on what was known as a lost call position, an operator whose entire business was to go after lost business. In two months' time they reduced their 18 per cent. to 9 per cent.

Supposing that we could apply—I am not saying that we can, but supposing that we could apply the same thing to this particular office, No. 7, then we would have a loss of $1,700 or a saving of $1,700, which would far more than pay for the operator's salary and the extra equipment and all that.

We can just put that down to a dollars and cents proposition. Of course, how much that can be reduced is a question. The fact first brought out, that our talk is largely suggestive, is simply because we have no information at the present time as to just what the standard is, what an office should absolutely show. If we had a two or three years' record on each of our offices, then we would have something to go by. We have not. We are just starting in on it. So we have to take these figures and others that may come to us and simply try to improve them. After we get a year or two along, we shall be able to specify an absolute standard for every individual office, the same as our competitors are doing now.

I was in a large office of our competitors recently and one thing there was of immense interest to me. They had ten long distance positions in a room and, in addition to the chief operator, there were two supervisors, each looking after five of the operators at the board. As I stood there for about 20 minutes, watching the two supervisors, I noticed that they kept going from one to the other of the operators, looking at their tickets.

The traffic manager told me it was the duty of the supervisors to find out absolutely whether there was a single ticket on the positions that had been there 30 seconds longer than was absolutely necessary. If there was a delay of ten minutes on any of the tickets, they are immediately taken off the board and taken to the chief operator to handle. They are following that procedure closely and a traffic man told me that the business in that particular territory had increased something like 16 per cent. within the past year.

Those are some of the values that come from the records if you go into them; follow them up regularly; and absolutely analyze them to find out where you are wrong.

MR. STROUD.

Fig. 5 shows another lost call report that is made out from another source, another company, and the classifications are somewhat different. Party refuses charges, unable to hear, no circuit, no connection, station closed, no toll, unable to get manager, party refused to talk, party calling unable to wait, talked over other lines, are column headings in addition to the codes ND (absent, not expected today), DA (don't answer), NF (no telephone), U (out, expected and the time is given when), UD (out, don't know when will return), NH (not here), By (busy), OD (out of order). In the new rules we have two classifications for the latter, namely: circuit out of order and telephone out of order. This record does not tell whether the telephone is out of order or whether the cause is in the line. In our analysis, we do not know which way to go, whether toward the telephone or toward the line, to effect our remedy.

Town	N D	D A	N F	U-UD-NH	By	O D	Un	Party refuses charges	Unable to hear	N C	No connection	Station closed	No toll	Unable get Mgr.	Party refuses to talk	Party calling unable to wait	Talked over other lines	Total
A	411	842	694	1043	24	78	101	10	36	110	24	32	90	..	72	1	54	3624
B	464	448	549	522	14	61	62	1	20	23	35	7	5	..	56	71	50	2388
C	191	156	387	245	1	27	35	7	18	6	19	4	17	1	18	92	23	1247
D	84	97	111	171	1	51	4	8	11	11	6	1	1	1	1	5	..	564
E	25	41	35	44	..	3	2	..	..	1	1	1	..	..	2	3	6	139

Sent canceled report, for an average month 1912, showing cause.

Fig. 5. Another "Lost Call" Report.

When "party refuses charges," that, of course, is a reason for cancelling the call. The only remedy there, is one which is pretty hard to institute. Probably the rate has been raised or something of that sort. The charges are too great.

"Unable to hear" comes right back to the question of transmission again. I do not know that we want to enter into the transmission discussion, but we can go into the question of maintenance, maintaining the batteries if using local bat-

tery equipment, and making a special inspection of the long distance customers' batteries every so often. I heard somebody say the other day that they decided who were the "rubbernecks" on the line by the length of life of the battery. If they would go into it for that purpose, they can go into it sufficiently to see that their long distance subscribers are getting transmission.

Town	Population	Subscribers	Messages offered	Per cent. completed	Per cent. lost	Messages revived
A.	560,663	20,101	23,261	84.3	15.7	271
B.	181,511	11,170	16,048	85.1	14.9	101
C.	168,497	11,951	8,245	84.8	15.2	No rec. kept.
D.	116,577	6,276	3,944	85.8	14.2	No rec. kept.
E.	3,807	906	1,450	88.0	12.0	26

Fig. 6. Record of Toll Messages, Average Month 1912.

"Station closed" and "no toll," as I understand it, is where toll is reversed. That is on the originating end at the request of the subscriber himself.

"Party refuses to talk." There are, of course, no causes for that which are chargeable to the telephone company.

"Party calling unable to wait" calls are low in this case. I do not know that there is any use of taking up time in discussing that feature.

"Talked over other lines" calls are mighty important. They are the result of many other conditions out along the line that are up to the company to remedy. If the manager in town A had 54 Bell talks because he could not deliver the goods, he ought to find out a way to deliver them. He can only find out by analysis how to do it, except in a haphazard way, as he may happen to run across it.

There was a question as to what allowance should be made in favor of a large or a small town on the question of lost call percentages and what conditions enter into the matter. I have already discussed some features of that matter, of the personal, individual elements in the operator, her knowledge of the people, and the conditions in a small town as compared with those of a large town where she is working as a machine.

As an exchange grows larger, there are chances for economy and there are necessities for economy because the operator becomes a machine. She works by routine, she overlooks many points, and she does not have time to give her attention to details. When you can get your exchange to a point where you can begin to specialize, where you have supervisors first and then a chief operator, the additional supervisors can look after special features and the toll switching operators. In some instances managers have specialized even a good deal farther than that in computing certain details of overtime and that sort of thing. They have special operators who have nothing else to do but to give their attention to working out the fine points. There is probably no end to the amount of specializing that can be done in an exchange.

In Fig 6 Town *A* has 560,000 population. The exchange of 20,000 subscribers had in an average month 23,000 toll messages offered and completed 84.3 per cent. It lost 15.7 per cent. and revived 271 calls. The percentages of Town *A* are pretty close to that of Town *B*, although the population is very much different. They are also about the same in the case of Town *C*. In fact, all of the percentages run fair except in the last town given, which it seems to me should be better than those of the first town.

Fig. 7 begins with a town of 500 population and ends with a city of 115,000. It will be noticed that there is a trend in the percentages which goes to carry out the principle previously mentioned and which I think is largely a question of individuality or personality in the operator. In the city of 115,000 population, the operators know a comparatively small percentage of the inhabitants and they do not know their habits. They simply handle the work as a machine. The calls come in and they are put through in the regular way. In that city the operators lose the desire to listen in on the line, because they are not concerned in the general flow of public business.

A town of 1,012 is represented by *B*. The percentage of messages finished is 89.8. Possibly in proportion to the general trend that ought to be a little lower. Farther down the column, the lowest percentage will be seen to be 84.2.

Discussion of Messages Finished.

There are some questions on which we would like to have some sort of a discussion. They are:

Should the city of 100,000 population have as good a percentage of finished messages as the town of 10,000?

What percentage allowance should be made for the city of 100,000 population in order that its record may be as good as that of the smaller offices?

What should be the standard of finished messages in towns of different populations?

Mr. Sears, of Aurora: I do not know how we could care for that other than by following up the analysis more carefully. The fact is, that it is a percentage table and we can not get away from it. I have been following the matter pretty closely and, out of 29 offices, our percentage of lost messages is down to 7.

In a few of the big offices, like Aurora, Joliet and Springfield, we have not been able to get it down to 10 per cent., or say, 10 to 14 per cent. There are certain conditions which prevent it—a lack of telephones. In Springfield, for instance, we have as many as 400 calls lost, due to no telephones and that brings up the percentage. When that cause is eliminated, it decreases the percentage considerably. I find that the DA (don't answer) calls also boost the percentage considerably. After we test the circuits out and refer them to the wire chief, we find them working properly. It seems to me we ought to class that under something else, "Not there," for instance, because they are really not there.

I have often thought of what percentage of lost calls we can allow. I think the only way is to follow it up. Oftentimes the operator is slow and does not get the call through quickly. She is also liable to meet with a busy telephone.

I will ask another question. Which element has the greater bearing on the lost calls, the question of the operator's personality or the percentage of development?

Mr. Stroud: In the small town more the personality, because she knows everybody. In the other it is the supervision; following up, I think.

Mr. Vivian: Often in small towns the operator, knowing the people, can ask favors; can ask subscribers to take messages for her and get somebody else to the telephone. She often takes advantage of this acquaintanceship.

Town	Population	Subscribers	Messages Offered	Percentage Finished
A	500	275	775	93
B.	1,012	463	363	89.8
C.	1,400	378	776	87
D.	2,000	462	882	92.1
E.	3,154	927	2,014	88.5
F.	3,972	701	1,056	91.9
G.	5,600	712	2,554	87
H.	9,500	1,298	2,660	91.7
I.	12,150	1,763	2,287	93.4
J.	25,000	2,757	5,761	86
K.	52,345	2,944	5,219	90.5
L.	115,000	9,518	15,030	84.2

Fig. 7. Comparison of Percentage of Finished Messages.

Mr. Sears: Not only that, but the switchboard may be in position so that she can look out of the window and see Mr. Smith go in the dry goods store and she will pick him up there. I have had operators pick men up in saloons. In a small office, where the boards face to the east, the operators can al-

ways have a window to the left of them. We often catch men right on the street. In the big cities, of course, messengers and closely following up the call are required.

MR. STROUD: The main object of the tables illustrating this lecture is to emphasize the necessity of systematic records, of the plant and line investment, as every idle minute means a

Name of Company	Exchange	No of tests.	Average answer	Average Disconnection	Average recall
N. Y. Telephone Co.	Albany	797	6.4	.....	....
Schenectady Home Tel. Co.	Schenectady	22	3.6	4	17.2
Albany Home Tel. Co.	Catskill	21	5.1	63.3	5.7
New York Tel. Co.	Catskill	51	6.7	60	5.7
Columbia Tel. Co.	Hudson	46	3.2	7	14.8
New York Tel. Co.	Hudson	47	5	5.7	5.7
Commercial Union Tel.	Ballston	20	3.1	5	6.5
New York Tel. Co.	Ballston	44	3.4	5.6	5.9
Commercial Union Tel.	Saratoga	46	3.8	3.4	7
New York Tel. Co.	Saratoga	49	4.2	3.4	8.4
Commercial Union Tel.	Schuylerville	15	4.7	130.3	44.2
New York Tel. Co.	Schuylerville	32	4	53.5	11.6
New York Tel. Co.	Baldwinsville	21	4	8.7	4.5
New York Tel. Co.	Mechanicville	58	4.6	4.6	6.9
New York Tel. Co.	Poughkeepsie	39	4	4.2	7.7

Fig. 8. Service Tests by New York Commission.

loss of money to the company. The natural traffic trend and the curve for the different hours of the day, show a theoretical loss that you can not compensate for except by creating new business—new kinds of business. That we do not now have to take into consideration. But we must take the natural traffic curve of the daily loads into consideration and provide facilities for handling the traffic efficiently.

The public does not know anything about your curves and your standards. They do know when calls do not get through and they tell you about it. It probably would be well if they always would tell about it, but under competitive conditions, they may go over and tell the other fellow and give him the business.

We have some illustrations of that on the Board of Trade, where the opposition company's booths are opposite to ours. We have some customers who come to our booth one week and go to the Bell one week. It may be that they stay away two weeks between visits. We have a chance to see that we are not badly regarded after all, because they certainly stay over on our side almost as much as they do on the other. That in itself is no guide. It simply calls attention to the fact that the public may transfer its affections from you to the other fellow, and it is up to you largely to prevent it by giving the service.

Service is the whole thing for which we have built our plants; for which we are charging money. We are getting the money and we must give the service if we expect to have a future. If we expect to build for the future, we must give the service now, not promise it for tomorrow or tonight.

MR. VIVIAN: The question, as I understand it, is: What percentage allowance of lost calls should be made for towns of different population? The point I wanted to bring up for my purpose is that the only way I can see that we can do is to all keep records. Then put those records together and strike an average.

The conditions in each town are different and the people are different. We must remember that and take a number of points of the same population to get an average of the habits, conditions and everything. Each company should keep a record and have the service association take the records; take all the towns, of 1,000 population and put the records all together. It would give an average then of what the standard should be.

One thing to be taken into consideration is the development in the town. Of course, we would probably have to figure that out from the percentage of telephones and all those things. I think the only way we will ever get a result, is to get a number of records together; work out from the population and development in those particular towns and then strike an average.

MR. STROUD: I was going to call attention to the fact that the service association has an operating standard form which might not fit everybody's condition as regards the rules. But it would fit enough conditions so that we could gather data, analyze it and eventually get a standard for the different elements that we know will fit general conditions.

The table given in Fig. 8 shows what the public service commissions are going to do for you some day or do to you, if you do not do it first.

I do not know how many exchange managers know what their answering time is. There are a number of them who do and a number who do not. That is just showing what the commission in New York is doing. They inform the exchanges they want the information for some purpose. Some day the question of service may affect the small manager's relation to the commission. If the public should take up the matter of poor service, the commission might be referred to or it might volunteer the information and give the comparison between one man's exchange and another's. The records only show the condition and the remedy must be sought in the operation methods of conducting the individual exchanges.

The table was taken from TELEPHONY which says regarding it:

"Inspectors of the New York Public Service Commission are constantly making tests of the service given by telephone corporations in various parts of the state. The table, which shows tests made in and about Albany, is for the year 1912.

The average answer is based on the elapsed time from taking up the receiver and the first answer by the operator. The average disconnection shows the elapsed time between hanging up the receiver and disconnection by the operator, so as to make the wires available for another call and obviate unnecessary busy reports. The last column shows the elapsed time between the finish of the call and the response of the operator when another party is wanted. Time is in seconds."

I knew there would be more or less said about commission work and thought this would give you an idea of what one commission is doing.

MR. VIVIAN: It strikes me there is a splendid lesson in the table. Men who have studied local conditions say that an operator must be worked to 10 per cent. of efficiency, if you are going to get the right result. The very face of that record shows there is something wrong with the way they are handling the equipment in the particular office having 130 seconds for the average disconnect time. If the equipment were right, the discipline right, and the load distributed right, that condition would not exist.

The table emphasizes that each office should have records so that the manager will know just what each operator is actually handling on the average and know whether the traffic load is distributed as it should be upon the local board. If the operators are working to that efficiency, they will be able to get the results that will be satisfactory.

Conversation Between London and Berlin.

The first telephone conversation has been held between London and Berlin. The distance between the two cities is 700 miles and the line includes 60 miles of submarine cable.

To Celebrate Great Expansion.

The Galesburg Union Telephone Co., Galesburg, Ill., has reached the 5,000 mark in its subscribers' list, growing from 1,200 at the beginning of operations. It is now proposed to fittingly celebrate this event by a big banquet, to which will be invited all the officers, directors and employes, with their wives and sweethearts.

Practical Subjects—Letters and Discussions

Unusual Receiver Trouble.

Perhaps the following account of a rather peculiar case of trouble that we found on one of our telephones, due to the design of the receiver, will be worthy of mention. The receiver was placed upon one of our business telephones for trial and in a very few days we received complaint that the telephone would go dead. Our repairman was sent out on the case and upon making a careful inspection, found no trouble. Shortly after we received another report, and this time a careful inspection was made of the telephone line and office equipment, all of which was found to be in first-class condition.

Upon the third report, we were at loss to know where the trouble could be, however we sent a repairman to the telephone instructing him to stay there until the trouble again appeared. After several hours waiting, the subscriber having used the telephone in the meantime without a single cut-out, the trouble again occurred. The repairman watching the subscriber closely noticed that in holding the receiver in the palm of his left hand, a heavy gold band ring shorted the exposed binding posts. This is another point in favor of the concealed binding posts.

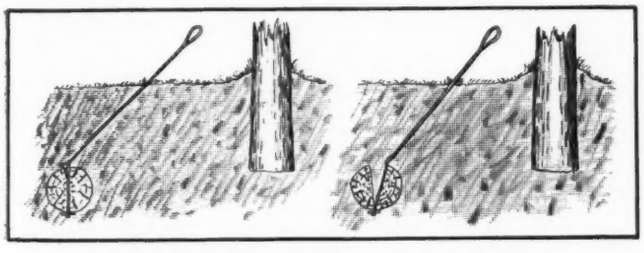
J. G. Howell, Wire Chief,
Jackson, Tenn. Jackson Home Telephone Co.

Letters from a Retired Lineman to His Nephew.

Podunk Valley Farm.

Dear Ben:—

So you expect to go on to New York for a little posting on your new job, in other words to get into touch with the men higher up. Its costing the company some money



Anchor Log Not Properly Laid—The Result.

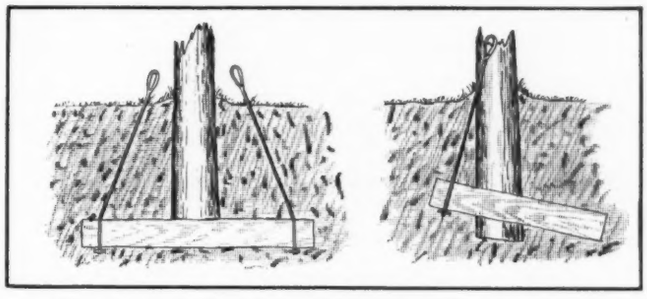
to look you over and also giving you a pleasurable trip. The men you will meet are those who have won their spins in some kindred branch of the organization—men with horns on their heads.

You won't understand that until I explain. A number of years ago I attended a lecture delivered by a clergyman to an assemblage of laboring men. He was a fearless, interesting talker and told the men a good many plain facts about themselves. He said most of them worked hard; so hard that they had horns on their hands; that they had a right to be proud of it. "And there are others" he continued, "who work just as hard; just as many hours a day and more; work until they have horns on their heads—on the inside though."

Now Ben, that's the kind of men you are going up against. May be some of them had horns on their hands once upon a time, but have in due process of time, transferred them to the inside of their heads.

One thing I want to impress upon you: The men higher up are as anxious to have you make good as you are to do so. Sometimes word comes down from the man still higher up asking for "such and such" a kind of a man. Now the man who receives such a message is more than anxious to fill the order. It is a credit to his management to have available, valuable, capable men at his call, and it is to the credit of his judgment if the man fills the bill.

But I wish you had the other two years of college. You say there's plenty of good men who never went to college, and I put that argument up to Doc. Stuver as a poser. But



Two Guys to one Anchor—Log Lifted by Guy Attached Near One End.

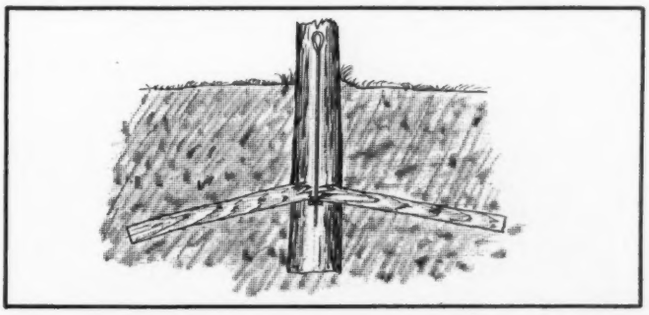
it was a flat failure. "Some of those good men," Doc says, "would have been great men and all of them better men with college training." And he demonstrated it to me in such a way that I've disposed of our sheep, pigs and the sorrel colt and put the money into 60 acres of swamp land down on the "Big Sag."

Doc. Stuver bought the entire swamp, about a thousand acres more or less for $5 an acre, last spring. Everyone said he was getting childish. He let me in on the deal at the time on an option plan of his own. But to make it clear I'll have to go back a little.

About five years ago, Podunk contributed three very unlikely looking and acting specimens of boys to the ranks of collegians. Old Barlow's son, Sam, went because the Reform school doors were ajar for him; Bill Luzer's boy, because there wasn't any room at home for him and he was disinclined to work; Hank Sneezby's boy, because he and his father disagreed about the merits of Hank's second wife as a step mother.

A year ago they came home as finished products from the educational mill. For six months they did nothing but drill around together in their ridiculous clothes and everybody, but Doc. Stuver, laughed at them. He was the only friend they had and raised his voice repeatedly in their defense.

I heard him hand it to Bill Sharp one day because Bill



Log of Unusual Length but Not Large Enough to Stand Strain.

said those boys were "spoiled in the making." "Bill" he said, "listen to me. See if you can get what I'm going to say, into that chuckle brain of yours. When you come in from the field at noon, you're usually pretty hungry and tired. You sit down and eat your fill. Then you take your pipe and sit out under the maples and feel as though you'd never want another thing to eat. But by night you're just

as hungry, now aren't you? Now that's the way with those boys. They've had an educational dinner and feel that they know about all that's worth knowing. But they're going to get hungry,—brain hungry—and thirst for knowledge before very long, mark my word."

Well after a time, their college togs wore out and they got into common clothes. They didn't look so bad then. But they didn't do much of anything in the line of work. Then they began examining the "Big Sag"; spent days and weeks in it and around it. Next they came to Doc. and it wasn't long 'til Doc. had an option on every acre of the worthless tract.

Doc. got them a surveyor's outfit and they set to work making maps and plans and finally Doc. put up the money and took over the land. They have the ditches all dug now and every one but Doc. and the boys are waiting to see if the water backs into the swamp in the spring. If it doesn't, the land will be worth $50 an acre. Doc. has been offered twenty already.

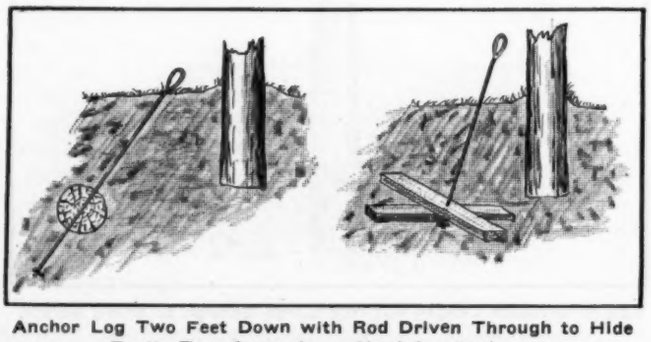
I put in a day with Doc. and the boys going over the layout and I believe they know what they're talking about. While the idea might have occurred to them if they hadn't gone to college, they wouldn't have had the knowledge to carry it through.

You say they are paying very close attention to guying lately; proper leads on the anchor and all that; size of guy strand; number of clamps; size of anchor logs; and anchor rods; the number of turns around the pole, etc. That is all along the line economizing on material; to secure the proper "factor of safety," I think they call it.

We used to make our own guy strand of iron wire, twisting as many strands of wire together as we thought necessary to carry the strain. In many cases the strand was continuous from the pole to the anchor log. In other cases improved anchor rods were used and a bunglesome joint made with the guy strand just above the ground.

Your specifications are probably the most satisfactory for general observance that can be devised at present. However, when you are setting anchors, take into consideration the nature of the soil. Certain kinds of soil will not pack and hold an anchor securely, and again, in hard soil, your men are liable to "cramp" the log or what ever is used.

Just before I quit linework, I went on a trip with an engineer, investigating the work on this line. We found some peculiar things hidden under the ground. Will try to sketch some of them for you. I was with a foreman one season who had the right idea about loose soil. He did what he called "roofing." He would dig the anchor holes big enough to allow a roof of plank to be laid upon the anchor log, slanting toward the pole like a shed roof. A tremendous weight of earth had to be lifted for the anchor to give way.

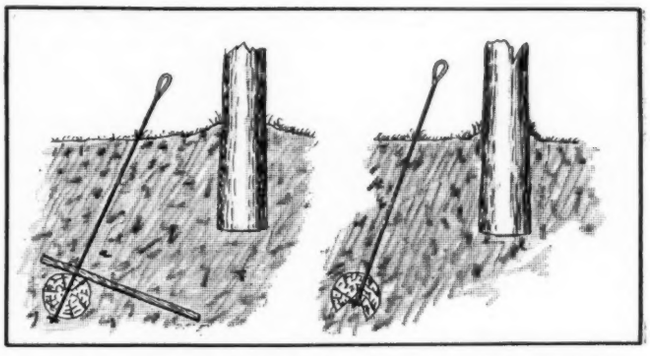


Anchor Log Two Feet Down with Rod Driven Through to Hide Fault—Two Cross Arms Used for Anchors.

Perhaps the most unusual things we unearthed were an old tin boiler filled with rocks and a half-barrel filled with lag screws, cross arm bolts, insulators and other line hardware.

We possibly dug out as many as 50 anchors and found perhaps, 20 per cent. of them in an unsatisfactory condition.

Setting anchors is a part of the work over which a reliable man should be in direct charge, as the opportunity to shirk and cover it up when the boss is away is too often taken advantage of.



Roof Extending Length of Anchor Log—Rod Without Washer Pulled Part Way Through Anchor.

Write when you get to New York. Your Uncle Dick.

Relation of Power Transmission and Telephone Lines.

At the annual convention of the Western Association of Electrical Inspectors at St. Louis recently, H. B. Gear, of The Commonwealth Edison Co., Chicago, presented a paper on the relation of power transmission lines to telephone and telegraph lines. The paper was published in abstract by the Electrical Review and Western Electrician.

Mr. Gear said that the possibilities of damage to the equipment of telephone and telegraph companies in case of a cross with high tension lines, as well as the risk of the life of operators, renders very important the proper safeguarding of transmission lines. Various interests, such as telephone companies, telegraph companies and railroad companies operating telegraph systems have proceeded independently to establish specifications, which to them seemed necessary to safeguard their equipment at points where they were crossed by transmission lines. Some of these have sought to secure protection by the use of wire cradles or networks suspended in such a way as to catch any broken wires. Some of the railroads have even required the use of a bridge of quite substantial construction to carry the conductors across their right of way.

The cradle construction has been found objectionable in that the poles were overloaded by the extra weight, and the cradle was quite likely to cause trouble almost as serious as that which it was designed to prevent. The bridge construction, while so strong that it could not fall down, is prohibitively expensive for any except very important lines.

The power companies in some cases have refused to provide any protection claiming that their franchise rights entitles them to as free use of a highway as was accorded by the franchise of the telephone companies, and that the telephone companies should provide protection at their own expense, if they considered it necessary. A situation of this class was brought to an issue during the past year between the American Telephone & Telegraph Co. and one of the divisions of the Illinois Traction Company, at Lincoln, Ill.

In this case a 33,000-volt line was brought along a street where it stood directly above a distributing line of the local Bell company, some of the poles being so placed

that the Bell company's wires rubbed against them. The telephone company having first established its line on its right of way instigated legal proceedings to enjoin the railway company from operating its transmission line. The outcome of this litigation established a precedent which requires the power company to provide the necessary protective equipment.

The National Electric Light Association held a series of conferences during the year 1911, with representatives of the American Railway Engineering and Maintenance of Right of Way Association, the American Institute of Electrical Engineers, the American Electric Railway Association and the Association of Railway Telegraph Superintendents, with a view to establishing a standard specification for crossings which would be acceptable to these various associations and which could be used by all light, power and electric railway companies in making their crossings. These specifications for the most part were adopted at the conventions of these various associations held during 1911 and 1912. There are still some paragraphs which are under discussion and which will, no doubt, be agreed upon during the coming year. The specifications are based upon the general principle that it is more practical to increase the factor of safety of the line itself, than to provide auxiliary protective equipment which decreases rather than increases the factor of safety.

The crossing is to be made so strong that it will not come down under the most severe weather conditions which are experienced in any part of the United States. The specifications cover all crossings over railroads and all crossings over telephone lines where the voltage is over 5,000. The transmission wires are to be carried across without turns and at such an elevation as to be above the telephone or telegraph wires. No cradles or bridges are to be used. The cross-arms, however, are to be covered on the top with a metallic strip which is securely grounded, so that the line will be put out of service by the automatic devices at the power house in case there should be a break in the conductor.

Clearances of not less than 30 feet above the rail and 8 feet above telephone and telegraph lines are to be maintained. The conductors are to be of stranded copper not smaller than No. 4 B. & S. gauge, or not smaller than No. 1, if of aluminum.

The poles are head-guyed each way in the span each side of the crossing to prevent wires sagging down in the crossing span, in case they should break in any of the spans adjoining the crossing. The strength of the conductor must be sufficient to carry a load of half an inch of sleet under a wind pressure of eight pounds per square foot. The poles or towers must be of sufficient strength to support the strain when a part of the wires are broken.

Some Instrument Troubles on Farm Lines.

In this country town, nearly all of the troubles which come to our commercial repair man are due to lightning or high resistance joints, such as rusty old lines and grounds as all of our farmer lines have a ground return. Most of them are of common steel fence wire, poorly put up by "green" hands.

Occasionally we find something a little unusual. Recently a telephone would not talk. We found that the connection between transmitter and primary winding of the induction coil, which was a ¼ in. metal strip passing through the battery compartment of a compact type set, had burned or rusted in two by salts leaking from a dry cell which had touched it.

Another telephone would not ring out. After considerable search we found that the machine screw holding the armature contact spring had evidently been replaced. The replacing screw was so long that it touched the end bearing of the hand generator, thus causing a short circuit.

Recently a telephone came in with the receiver open. We found the threads had been stripped on machine set screw that clamped one of the receiver cord tips. In order to make the set screw hold, a small piece of muslin was wrapped around it. When the rag was removed and a new screw put in the receiver came up O. K.

Republic, Mo. O. L. F.

Dry Cells Long Service—A Case of Trouble.

I have a pair of dry cells which were installed April 12, 1904, and were taken out February 8, 1913, a period of 8 years 9 months and 26 days.

A farm line which is owned by the subscribers could not ring central. The line was measured and found to be 1,400 ohms with 4 1,600-ohm telephones on it. The old drop coil was wound to 100 ohms. It was changed to a 500-ohm coil and the line has worked satisfactorily ever since.

F. E. Munsell, Supt.,
Hamilton, Mo. Hamilton Telephone Co.

Waterproofing and Acid-Proofing Concrete Floors.

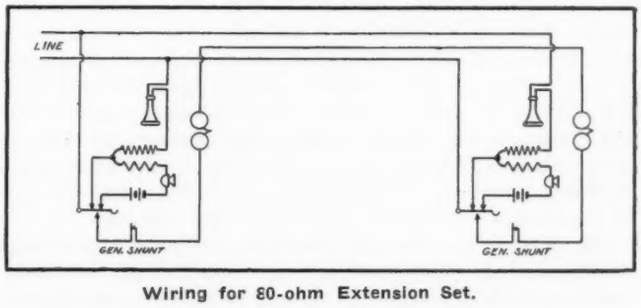
Where water is coming through concrete because of porosity, the Aberthaw Construction Co., of Boston, has found that a treatment of boiled lineseed oil, thinned down with gasoline, will do much to cure the trouble. It has built roofs which were to cover delicate instruments in fortification range finders. These roofs proved porous, but a treatment with boiled linseed and gasoline cured the trouble permanently. It is said to be a thoroughly good treatment for porous brick walls, has the merit of being very cheap, the materials are reasonably available and the most ordinary laborer can apply it intelligently enough to be effective. Besides this method, paraffine can be dissolved in gasoline and applied in a similar way with good results.

There is probably nothing that can be done to make a cement floor acid-proof. The treatment with linseed oil will retard the effect of the acid. Of course, particularly dense concrete will deteriorate more slowly than porous concrete. Where acid is to be used, it is economical to give the floors several good coats of linseed oil and gasoline, and, if possible, during shut-downs, to repeat them.

Circuit for Extension Set.

In the issue of TELEPHONY for Jan. 31 is a request for information regarding the connecting of an extension telephone set to the line and it reminded me of a method I have frequently used with good results. I am submitting a sketch of it in the hope that others in small towns having 80-ohm telephones may be benefited by it.

The method is very simple. The talking circuits are in



Wiring for 80-ohm Extension Set.

multiple while the ringing circuit is in series. The removal of either receiver from its hook will open the ringing circuit giving a clear line to talk over. Both telephones may be used as in any bridging party line.

Axtell, Kan. F. K. NOEL.

Uniform Accounting System of Interstate Commission

Complete Details of Plan Promulgated by Government Body for Use of Every Telephone Company Having Annual Income of Upwards of $50,000—Plan for Smaller Concerns is Now Under Contemplation—System Effective Universally January 1, 1913

25. **Joint operating expenses.**—When any operating expense is incurred by the accounting company for the joint benefit of itself and others under an agreement for apportioning such expenses the company charging such expenses to others should credit such amounts to its primary expense accounts to which the expenses were charged when incurred. The debtor company should charge the amounts so billed to its primary expense accounts. Bills rendered by the operating company for joint expenses should show the expense in detail.

The amounts so handled through the expense accounts should not include any allowance for profit or return upon the value of the property used; such allowance, if any, should be credited by the payee to the appropriate rent revenue account and charged by the payor to the appropriate rent deduction account.

TEXT EXPLANATORY OF OPERATING EXPENSE ACCOUNTS.

I. Maintenance Expenses.

601. SUPERVISION OF MAINTENANCE.—This account should include the pay and office and traveling expenses of superintendents and their assistants when directly in charge of maintenance of telephone plant, including general, division, and district plant superintendents, engineers, architects, and their office and field forces; the cost of repairing drafting and engineering instruments, and the original cost of such instruments as are not properly chargeable to fixed capital accounts; the cost of office and other supplies used by officers and employes whose salaries are charged to this account; janitor service, light, heat, and miscellaneous office expenses where separate offices are maintained for such employes; also that portion of the salaries and expenses of the general engineering staff of the company which is assignable to maintenance.

602. REPAIRS OF AERIAL PLANT.—This account should include the cost of repairs of all plant classified as aerial plant, such as poles, towers. cross arms, pins, brackets, and other pole fixtures; braces, guy wires, guy stubs, and other pole supports; aerial cables, and the suspension wires, bolts, clamps, rings, hangers, etc., used to attach cables to poles, towers or other supports; aerial cable loading coils, cable boxes, and their appurtenances; and aerial telephone wires, drop wires, tie wires, insulators, and sleeves. It includes also the cost of trimming trees and clearing and removing obstructions from right of way for aerial plant, other than the cost of first clearing right of way.

603. REPAIRS OF UNDERGROUND PLANT.—This account should include the cost of repairs of all plant classified as underground plant, such as underground conduits and their appurtenances; underground cables, submarine cables, and the loading coils, towers, boxes, and fittings belonging to such cables. It also includes the cost of repairing right of way for underground and submarine cables, and the cost of repaving after repairs of underground conduits.

604. REPAIRS OF CENTRAL OFFICE EQUIPMENT.—This account should include the cost of repairing telephone equipment in central telephone offices, such as switchboards, monitors' and supervisors' desks, testing outfits, main and intermediate frames, cables, and jumper wires, call registers and meters, relay racks and coil racks; equipment for generating and regulating power for telephone purposes, such as batteries, engines, motors, generators, rectifiers, transformers, meters, fuses and protectors; telephone and telegraph instruments and other electrical instruments and apparatus in the central office; equipment for operators' schools and rest rooms, and furniture and fixtures required for the uses or convenience of the operating forces.

605. REPAIRS OF STATION EQUIPMENT.—This account should include the cost of repairing station apparatus, such as telephone sets, intercommunicating sets, bells, backboards, desk stands, coin boxes, protectors, battery boxes, batteries, cords, and telephone and telegraph instruments or parts thereof; interior block wires; private branch exchange switchboards, distributing frames, and switchboard cables, and booths and special fittings for same, such as desks, chairs, fans, and cash registers.

NOTE.—The cost of renewals of batteries at stations is not chargeable to this account, but to account No. 628, "Transmission Power."

606. REPAIRS OF BUILDINGS AND GROUNDS.—This account should include the cost of repairing general offices, central offices, test stations, or other telephone offices and the fixtures (except telephone apparatus) therein, such as elevators, plumbing, apparatus for heating, lighting, ventilating, and power; and the cost of maintaining yards and grounds, with their fences, sidewalks, sewers, etc., appurtenant to such buildings. Charge also to this account the cost of repairing shops, stores, stables, and garages, and permanent fixtures therein.

607. STATION REMOVALS AND CHANGES.—This account should include the cost of disconnecting and removing and of changing the location of all plant classified as subscribers' station equipment (as defined in account No. 230, "Station Equipment"), including freight and cartage on such equipment and material as is sent to storehouse.

(1) When stations are removed (not merely changed in location) from subscribers' premises, the original cost (estimated, if not known) of the station should be credited to the appropriate fixed capital accounts, and the cost of the instruments, private branch exchange apparatus, booths, and fittings should be charged to account No. 122, "Materials and Supplies," while the cost of installation, including inside wires, or interior block wires, and the portion of aerial wire which could be used only at the subscriber's premises from which the station is removed, less the value of any salvage, should be charged to this account.

NOTE.—When extensive replacements are made of subscribers' station equipment, or of drop or block wiring taken out of service because of inadequacy, or obsolescence, as when a magneto system is changed to a common battery or when open wire distribution is replaced by interior block construction, the cost of making such replacements should be handled through the regular construction and depreciation accounts, and should not be included in the above account.

(2) If wiring left from previous installations is reused either on same or other premises, the gain should be credited to this account. This includes the gain on inside wires and interior block wires and on that portion of aerial wire which could be used only at subscribers' premises.

(3) When stations are disconnected but left on premises, charge to this account the cost of disconnecting, and when reconnected, the cost of reconnecting.

(4) When station location or service is changed, charge to this account the cost of such changes, less the amount

if any, properly chargeable to fixed capital accounts for actual additions to plant.

(5) Credit to this account amounts charged subscribers for moves and changes.

608. Depreciation of Plant and Equipment.—Charge to this account monthly the amount estimated to be necessary to cover the depreciation accruing during the month in the company's tangible fixed capital (except depreciation provided in "Clearing Accounts," Nos. 701, 702, and 703). Amounts charged to this account should be concurrently credited to account No. 102, "Reserve for Accrued Depreciation—Cr." (See sec. 23.)

609. Extraordinary Depreciation.—This account should be charged monthly with such an amount as will, through its regular application, amortize any amount that may be carried in suspense on account of extraordinary casualties and unanticipated reconstruction. (See sec. 24.)

610. Other Maintenance Expenses.—This account should include cost of repairing telephone plant and equipment not provided for elsewhere.

611. Repairs Charged to Reserves—Cr.—Credit to this account and charge concurrently to account No. 102, "Reserve for Accrued Depreciation—Cr.," an amount equal to cost of extraordinary repairs made for which provision had been made in that reserve; also, credit to this account and charge concurrently to the insurers or to the insurance reserve an amount equal to the cost of repairs made necessary by casualties, when such cost is covered by insurance or an insurance reserve. (See sec. 21.)

II. Traffic Expenses.

620. Central Office Superintendence.—This account should include the cost of all central office superintendence as provided in the following subaccounts:

621. *Traffic Superintendence.*—This account should include the pay and traveling expenses of officers and their assistants when directly in charge of traffic, either for the company as a whole or a territorial subdivision; also cost of office supplies, stationery, and printing; janitor service, light, heat, and miscellaneous office expenses if separate offices are maintained for such employees.

622. *Service Inspection.*—This account should include the pay and expenses of service inspection forces, including all employes on this work not engaged in the regular handling of the traffic.

623. *Clerical Operating Wages.*—This account should include pay of clerks, stenographers, and office boys engaged in traffic work in central office operating rooms.

624. Operators' Wages.—This account should include the pay of chief operators, assistant chief operators, monitors, supervisors, information operators, directory operators, operators employed in the distribution of tickets to other operators, operators engaged in quoting toll rates and charges, switchboard operators, telegraph operators, and all other operators employed in the operation of the central office equipment.

625. Central Office Supplies and Expenses.—This account should include the cost of all central office supplies and expenses as provided in the following subaccounts:

626. *Rest and Lunch Rooms.*—This account should include the cost of operating the retiring, rest, and lunch rooms for central office employes, including the cost of lunches provided for such employes. Credit to this account amounts received for lunches served.

627. *Operators' Schooling.*—This account should include the expenses of training new operators (whether a school is maintained or not), including wages paid them for which no service is rendered, the salaries and expenses of instructors, and supplies furnished to schools for operators.

628. *Transmission Power.*—This account should include the cost of power purchased for transmitting traffic and for operating signals; the cost of renewing local and central office batteries; and the cost of labor employed and supplies consumed in operating the generating plant and storage batteries for transmitting current or for operating signals.

629. *Central Office Stationery and Printing.*—This account should include the cost of all postage, stationery, stationery supplies, and printing for use of central offices.

630. *Messenger Service.*—This account should include pay and expenses of messengers employed in delivering messages and notifying persons of calls at telephone stations.

631. *Miscellaneous Central Office Expenses.*—This account should include the cost of water, ice, fuel, lights, towels, toilet supplies, and of janitor service and other care of central offices.

632. Pay Station Expenses.—This account should include all traffic expenses, except commissions and central office operating expenses, incurred in connection with the operation of public pay stations.

633. Other Traffic Expenses.—This account should include all traffic expenses not elsewhere provided for.

Note.—Rent paid for central office is chargeable to account No. 331, "Rent Deductions for Telephone Offices," and not to this account.

III. Commercial Expenses.

640. Commercial Administration.—This account should include the pay and expenses of officers and their office forces directly in charge of the commercial department, either for the company as a whole or for a territorial subdivision; the pay and expenses of employes when engaged in preparing contract orders, handling unsolicited contracts or contract changes including miscellaneous relations with subscribers and patrons not specifically assignable to promotion, collection, or directory expenses. Charge also to this account the cost of postage, printing, and stationery; janitor service, light, heat, and miscellaneous office expenses if separate offices are maintained for such employes.

Note.—This account may include the entire pay and expenses of employes of the commercial department who are only incidentally engaged in duties in connection with promotion, collection, and directories; if such employes are assigned all or part of their time to such duties their pay and expenses should be charged proportionately to the accounts provided for such expenses.

641. Promotion Expenses.—This account should include the pay and expenses of employes and the cost of demonstrations, advertising, and canvassing designed to promote the extension of the company's business, as provided for in the following subaccounts:

642. *Advertising.*—This account should include salaries and expenses of the advertising manager, his assistants and clerks; cost of commercial advertisements in newspapers or magazines; posters, bulletins, advertising sundries, booklets, and all related items; also minor rents and cost of installing and operating telephones in public places wholly for demonstration purposes.

643. *Canvassing.*—This account should include expenses incurred in soliciting new business or for changing or renewing existing service, including the pay and expense of canvassers.

644. *Sublicensee Relations.*—This account should include expenses incurred in developing the exchange of business with sublicensee companies and independent connecting telephone companies.

645. Collection Expenses.—This account should include the cost of accounting for and collecting the revenues of the company, as provided for in the following subaccounts:

646. *Revenue Accounting.*—This account should include the cost of keeping accounts with subscribers and rendering bills

for revenue service, including the cost of postage, stationery, and printing, and pay and expenses of bookkeepers and all clerks in accounting department having to do with subscribers' accounts.

647. *Revenue Collecting.*—This account should include the expenses of the collection bureau, including postage, stationery, and printing, collectors' salaries or commissions, car fares, cost of badges, and of delivering bills.

648. *Pay Station Commissions.*—This account should include commissions allowed for handling exchange and toll service messages from public pay stations.

649. DIRECTORY EXPENSES.—This account should include the cost of preparing, printing, and distributing directories, including the cost of soliciting advertisements for directories. (See account No. 132, "Prepaid Directory Expense.")

650. OTHER COMMERCIAL EXPENSES.—This account should include all commercial expenses not provided for elsewhere.

(To be concluded.)

Practical Telephony for the Practical Exchange Manager

A Series of Articles Relating to the Construction, Maintenance and Operation of a Moderate Size Telephone Exchange, Which Began in the Issue of September 21, Expressed in Everyday Terms, Easily Understood—Principles Easily Applied

By H. R. Van Deventer

Before attempting tests on any telephone instrument, the wires should be disconnected at the instrument and the wire chief asked to test them. This quickly shows whether the trouble is in the line or instrument. If in the lines, it should be opened at the protector, to determine whether or not, the trouble is in the inside wiring.

Presuming the trouble to be in the instrument, if of a non-signaling character such as a noise or open, the line at central is left connected to the board as usual. If it is a "short" or some other trouble that displays a signal, it is best to switch the line to one of the wire chief's "trouble lines," so he can be obtained for test from time to time as required.

Suppose the trouble is a short in the instrument causing the line signal to be permanently displayed; simply put the receiver to the ear and listen, meanwhile holding the hook down. If something can be heard, it is more than likely that the short is between the springs of the hook switch. Remove

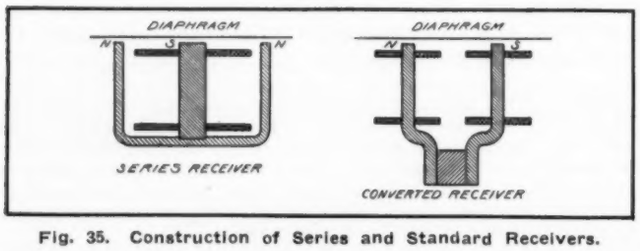


Fig. 35. Construction of Series and Standard Receivers.

one screw from the hook springs and separate them. If this cures the trouble, new insulation and bushings are the remedy.

If nothing can be heard in the receiver with the hook down, take the receiver off the instrument and insert it in a series with one line and line binding post. The current flowing through the line, receiver, and short in instrument, will be noticeable each time one receiver cord is tapped on the post. The wiring can now be examined for a possible cross, but first feel the ringer clapper. If it is held to one side, battery current is flowing through it and the condenser is at fault. To prove this, take one wire off the condenser, or, if the set has terminals for the ringer wires, disconnect the ringer terminal going to the condenser. This should open the short.

Suppose the trouble is "can't ring." Raise the receiver and ask "Central" to ring. If the sound of the generator can be heard, the circuit to and through the instrument is OK. Short circuit the condenser terminals and see if current passes through the ringer spools as evidenced by the clapper sticking firmly to one side. If it does not, the trouble is in the ringer spools provided a good spark can be obtained across the ringer terminals when the condenser is short circuited. Another test is to place a receiver across the ringer terminals. If the ringing current can be heard loud and strong, the coils are probably open. Of course, some sound of ringing current will be heard in the receiver used this way, owing to the high resistance of the ringer, but the difference between some and all of the ringing current passing is readily distinguished.

Occasionally a transmitter will increase in resistance to the point where not enough current will flow to operate the line relay. The remedy is to change the transmitters.

Sometimes an attempt is made to convert the standard permanent magnet receiver to the series type by removing the magnet. It is true that this will work after a fashion, but is quite inefficient and affects not only the incoming but the outgoing transmission. The reason for the latter is that the winding of the series receiver seldom measures over 40 ohms and is of comparatively low impedance, while the standard receiver usually measures from 75 to 100 ohms, and has a high impedance, having many turns of wire to its coils. This affects the transmitter current, the impedance affecting the impulses therefrom and tending to flatten them out, rendering the quality poor.

The receiving is poor because the effect on the diaphragm is different than when a properly constructed series receiver is employed. The difference in construction is shown in Fig. 35, where an outline of the magnetic circuit of both types is given.

The series receiver structure, Fig. 35-*A*, presents three poles to the diaphragm, two of the same polarity, say *N* and one *S* pole. The result is that a certain fixed pull is exerted on the diaphragm, this being the difference between that exerted by *NN* minus that exerted by *S*. On a short line where a large current would flow, the increased pull of *NN* would be offset by the increased opposition of *S*. Hence a balance would exist, good for all practical conditions of line resistance.

Now consider the converted receiver, Fig. 35-*B*, on a short line where much current flows. The poles *N*, *S*, act directly upon the diaphragm with great strength, so that it is pulled down and held so strongly as not to be free to vibrate as it should. On a long line, the pull is less than it should be. The performance of such a receiver is therefore largely dependent upon the line condition—a factor often fatal to the success of commercial equipment of this class. While the series receiver is a very simple piece of apparatus, its design and construction has called for careful expert work, and its place cannot be taken by a makeshift such as an ordinary receiver with the magnet removed.

As the battery current passes through the winding of the series receiver, the winding sometimes gets warm. This is no indication of trouble.

The distance between the diaphragm and pole pieces differs greatly in the various makes. To insure uniformity among receivers of any one make, a gage may be constructed to measure this distance.

(To be continued.)

The Telephone Inspector and the Troubleman

Continuation of a Series of Articles Begun in the September 7 Issue of Telephony—They Deal in an Elementary and Explicit Manner With Many of the Problems Encountered by Telephone Men in the Operation of Small Exchanges

By A. E. Dobbs

The next morning George came into the shop and greeted Will with: "Well, I found it all right."

"Found what?"

"Why that piece on development studies that you asked about yesterday," George answered. "It was a lecture given in Montreal by F. M. Simpson at a meeting of the Montreal Employes' Association and was printed in the Telephone Gazette."

"How did you happen to get hold of it?" Will asked.

"Oh," responded George, "a friend of mine up there thought it was good stuff so he sent me a copy of the magazine containing it. I'll read it to you as it's not very long. No attempt is made to describe details of a multi-office study. Only the standard methods used in making fundamental conduit and cable plans for a single office district are explained.

"Mr. Simpson began his lecture by saying that, briefly, the fundamental plan determines: The ultimate number and distribution by blocks of subscribers' lines for which switchboard and cable facilities should be provided; the number of and the best locations for central offices in the exchange area; and the proper direction and capacity of the underground conduit, the size and direction of cables and the location of terminals. He then continued as follows:

"'The present method of estimating telephone development is called the "house-count," the purpose of which is to indicate on a map, by means of symbols, the telephone possibilities of the exchange area. These possibilities are classified according to the portion of a telephone line which each may be expected to require.

"'Not only existing, but future possibilities, are considered and provided for. The system upon which this is done is exemplified in Figs. 1A and 1B. By finding the ratio of present possible number of lines to present population, it is possible to determine the ratio of future lines to future population.

"'The data to be collected includes physical conditions, taking in streets not suitable for underground conduits, lanes suitable for distribution, obstructions by shade trees, swing bridges, etc. Notes are made of the condition of the pole and cable leads, and information is obtained from the local authorities regarding the power available, which may be required by the company, also the population of the area in question for past years and at the present time.

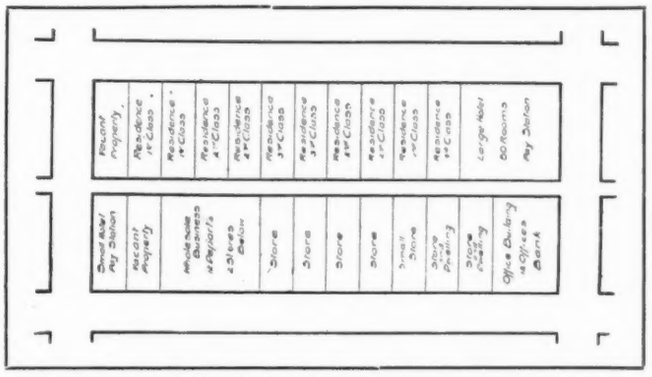


Fig. 1B. Plan of Typical Business Block in a Small City.

"'This population curve will indicate these three things:

1. The growth of the area in the past.
2. The present population.
3. The estimated future population for the ensuing 5 and 15 years.

"'The uses of the curve are to determine the present telephone development, next to find the number of telephones expected at the end of a five-year period, upon which will be based the amount of initial cable plant to be installed, and finally to determine the number of telephones for the 15-year period, from which number the ultimate capacity of the underground plant will be estimated.

"'Having the figures for the past in hand, it now remains to plot them in the form of a curve. The base line is divided in accordance with the intervals between the years in which the information was obtained and, on the vertical line, the population figures are arranged in equal intervals of increase. The curve being completed for the past growth, it should be carefully studied to get a general idea of what the future may be in the way of increase or decrease in the population.

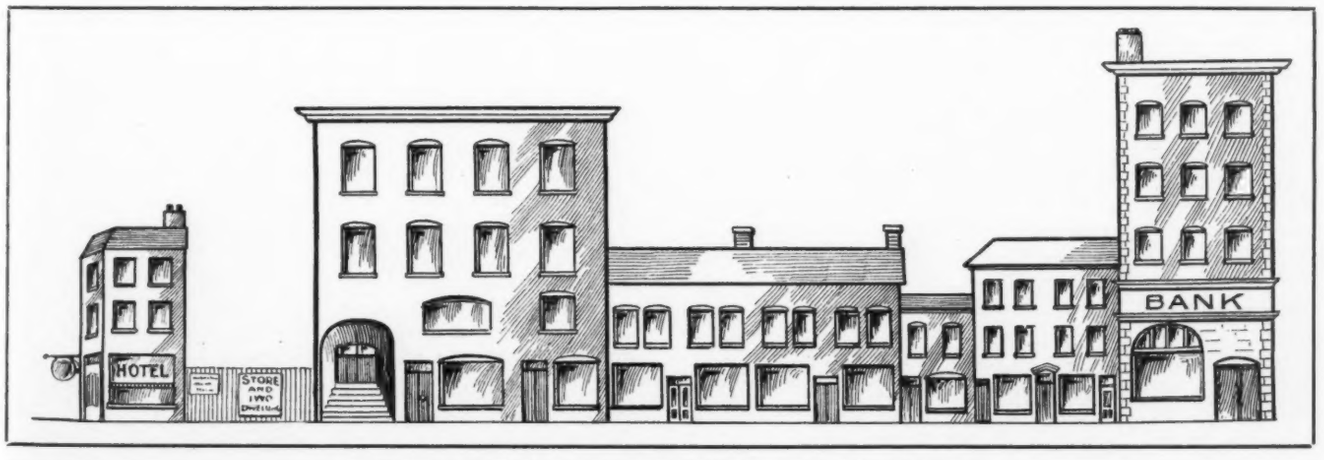


Fig. 1A. Face of a Typical Business Block in a Small City.

"'Various towns may show sudden inflation or depression. The causes of all such changes should be carefully enquired into and noted, in order that they may be kept in mind when using the curve for estimating purposes. The necessity for allowing for a recurrence of such abnormal decreases and increases must be considered and the fu-

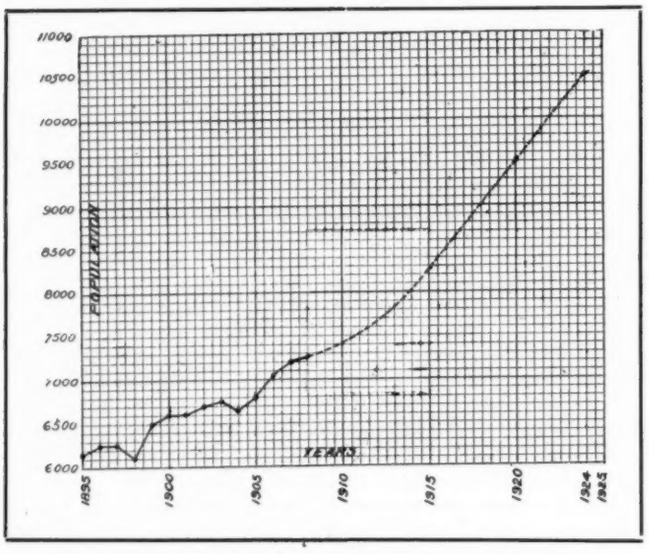


Fig. 2. Population Curve as Used in Development Work.

ture estimate tempered by such liabilities. A study having been made of the curve it remains to continue it for the future estimate based upon the findings.

"'The necessity for having a time limit for fundamental plans is important for two reasons, the average life of the major portion of the telephone plant is not greater than 20 years, and 20 years is as far in the future as conditions can be intelligently forecasted. In making fundamental plans for Canada where conditions show an abnormally high rate of increase this limit is reduced to 15 years. After having thus obtained the future growth in population the next work is the reducing of present possibilities.

"'This consists in reducing the present possibilties, as obtained by the 'house-count' to line figures, and in placing such figures on the map provided for the purpose in the preliminary office work.

"'Having thus determined the total present possibilities, it is applied to the ultimate population figures as indicated by the curve, and the resultant figure represents the possibilities that may be expected at that time. From the number of ultimate possibilities, the ultimate number of lines can be determined by applying the line allowance given for each possibility for the particular city under consideration.

"'The ultimate possibilities are assumed to bear the same proportion to the ultimate population, as the present possibilities do to the present population. It naturally follows that the ultimate lines will be considerably in excess of the present, the balance therefore must be distributed in the blocks throughout the ultimate territory of the exchange area.

"'Before distributing the ultimate lines, the town should be divided into two districts, business and residence, indicated by boundary lines. It is assumed that the present business area will be to the ultimate area as the square root of the present population is to the square root of the ultimate population, expressed in terms of square feet. This is due to the tendency to erect office buildings and stores of increasing height. It is therefore safe to assume that with the increasing value of business district property, the older buildings will be replaced by newer and higher ones and the maximum destiny per block should be fixed by the maximum height of the buildings, as determined by considerations of economy or legal restrictions. Having thus defined the ultimate business area, the ultimate business lines should be distributed over this area.

"'The ultimate residence area may be assumed to bear the same relation to the population as at present, and the increase in the ultimate lines over the present possible number should be distributed in those blocks which are not wholly built up and in those where a change in the character is expected, also on the outskirts of the city.

"'The development in the territory occupied at present will show that, as the present boundaries are approached, the development gradually tapers off until there is practically nothing left. These conditions will undoubtedly exist at the time the ultimate area is occupied, and in apportioning the ultimate lines assigned to the present unoccupied territory, they should be made to taper off on the outskirts, since it is impossible to predict accurately the exact extent of a city 15 years from now. The distribution in the residence area should also provide for a certain number of business lines and pay stations which are always to be found scattered throughout the residence districts.

"'The residence lines, forced out of their present area through the growth of the business area, will be found in some other location in the ultimate residence area and should be added to the total ultimate residence lines to be distributed. In distributing the ultimate lines, it has been assumed that the general character of the town will remain unchanged. Where it can be ascertained that changes will present themselves before the expiration of the study the changes should be noted, and the proper allowance made in distributing the ultimate lines. When the final distribution of the ultimate lines has been determined and indicated block by block on the preliminary record map, these data are ready to be transferred to the final record map.

(To be continued.)

The Talking Telephone Cocoanut.

"While in the government employ in the Philippines," says Sanford Jones, manager of the Western Electric Co. at North Yakami, Wash., according to a contemporary, "I was stationed on the island of Basilan, which is a small island in the Sulu archipelago. The natives of the island were so uncivilized that they did not even know the value of money, and of course had never heard of a telephone. We frequently had them entertain us with their native dances, and in turn would fill them with wonder and awe with a phonograph which we had in our outfit. We found it necessary to put up a telephone line between two buildings that were a little distance apart. One day I found a rather large cocoanut under a tree near the bamboo hut we were living in, and conceived the idea of making a cocoanut talk. So I emptied the contents and hung it on the outside of the house opposite the telephone, so arranged that we could put the receiver through the grass wall and drop it into the cocoanut.

"We invited some of the natives to see the wonderful cocoanut that we could make talk, and with the aid of an interpreter at the other telephone who understood their language we had a lot of fun. Some of the natives were so frightened they left the village, and one day a delegation of natives came and asked us to burn it, as they did not like to have so uncanny a thing around. So, with great ceremony and much rejoicing, we consigned it to the flames, and to this day I suppose they are telling their children about the cocoanut that could talk."

Railway Telephony—Practical Points in All Branches

A Regular Department Which Appears Bi-Monthly—Scope Includes Principles of Construction, Testing, Operation and Maintenance—Columns Open for Contributions on Matters of General Interest to Those Engaged in This Branch of Telephony

Diagramatic Explanation of Resistance Grading in Selective Signaling Telephone Circuits.

By John A. Kick.

The illustration is roughly diagramatic of the ohmic composition of a selective signaling circuit, the selector loops being represented by the non-inductive variable resistance which is included in the selector circuit and graded according to the position of the selector. Space prohibits construction of a scaled drawing but the figure will serve as a basis for an explanation, as it clearly indicates that the selectors are removed from the main circuit a distance in ohms dependent upon their position.

Assume the stations to be as indicated by the letters A to G and 5 miles apart with a type of selector requiring 4 milliamperes normal operating current, and also that the selectors measure 5,000 ohms fixed resistance. A condition then obtains wherein the required voltage across the terminals of selector G is 20 volts as $R = IR$, I being .004 ampere and R, 5,000 ohms.

Assuming the line to be 10 ohms per loop mile, then the line drop between F and G is .2 volts as again $E = IR$, I being .004 ampere and R, 50 ohms. Then the required voltage across the line at $F = 20 + .2 = 20.2$ volts.

In addition to the line to G and including the selector at G is a selector at F and across its terminals is applied the 20.2 volt current. Solving the equation $R = \frac{E}{I}$ for the total resistance of the F selector with 20.2 volts applied,

$$R = \frac{20.2}{.004} = 5{,}050 \text{ ohms.}$$

As 5,000 ohms are included in the fixed resistance of the selector, the artificial line resistance equals $5{,}050 - 5{,}000 = 50$ ohms. This equals the line resistance between stations F and G, indicating that selector F is really removed from the line in an artificial loop equivalent to 5 miles of line as is roughly shown in the figure.

The selectors at F and G each require .004 ampere operating current and the resistances between E and F being 50 ohms, the voltage drop between these points is then found by use of the equation, $E = IR$. Substituting in it, $E = .008 \times 50 = .4$ volt. The total voltage applied at E equals $20.2 + .4 = 20.6$ volts. The resistance of E is then

$$R = \frac{E}{I} = \frac{20.6}{.004} = 5{,}150 \text{ ohms.}$$

5,150 — 5,000 = 150 ohms, which represents the artificial line to be added to the E selector.

It will be noted that the artificial line at the E selector is in excess of the artificial line at F but the voltage across the terminals of E is also higher than that across the terminals of selector F.

This reasoning holds good throughout the selector grading with the result that the artificial line to be added at A equals 1,050 ohms or an artificial line loop of 105 miles.

Should the circuit be of considerable length, the No. 1 station would ordinarily have, say 100 volts impressed across the terminals of its selector, the artificial line loop would then be $R = \frac{E}{I} = \frac{100}{.004} = 25{,}000$ ohms or 20,000 ohms in the loop or 2,000 miles in line resistance equivalent. This is clear when it is understood that the required current between A and B is five times that in the selector at A. Hence the proportion of 5 to 1. Following the law that the current is inversely proportional to the resistance, we find that the resistance in the A selector loop is many times that of the loop between A and B. This also explains the great artificial line resistance between the main line and the A selector. In miles the No. 1 selector is the closer to the master station but in ohms it is the greater distance removed, in fact the distant terminal selector is theoretically the nearer.

This explains why all selectors can be cleared from the line except No. 1 and the signaling to No. 1 continue uninterrupted. The reasoning does not always apply as in case of a selector, say No. 30, 150 miles distant, the current would equal the total voltage, say 150 volts across the terminals of the selector plus the line loop resistance (1,500 ohms) or $I = \frac{150}{5{,}000 + 1{,}500} = .023$ amp. In the case of Section No. 1 we would have, approximately, $I = \frac{E}{R} = \frac{144}{36{,}000} = .00416$ ampere when the line beyond A is cut off.

Were all stations always a fixed distance apart, it would be possible to construct a resistance grading table which would start with the distant station as No. 1. Opposite each station would be placed the artificial resistance and the required main battery for the circuit, considering that it terminated at any station as the main signaling station. But due to irregularities in distances, complex curves and other means are employed, which require more or less mathematical skill.

Referring to the illustration it will be noticed that what is true of the selective bridges in respect to the line, is not true of the transmission bridges. All these bridges are in the same relation, that is, directly across the line without grading except where special transmission systems are employed. With special transmission systems wherein grading is employed, the

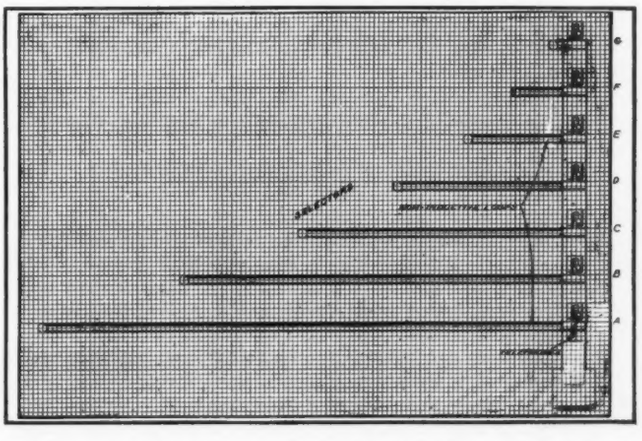


Illustration of Ohmic Composition of Selective Signaling Circuit.

results are not secured by the same method of adding resistance in series. It is accomplished by a switching means controlling the application of by-paths around and impedance in series with the home receiving circuit and other methods.

A telephone train dispatching circuit is, in effect, a combination of a direct current and an alternating current circuit,

working over the same pair of wires. For the purpose of studying either, it is well to neglect the presence of the other until the circuit details are mastered.

From an engineering standpoint, this does not hold true, as the efficiency of one circuit is seriously reduced if the other is not designed with careful consideration of the characteristics of the other. The selector circuit must have sufficient impedance to prevent transmission losses, and the transmission circuit must include a patch for the voice currents which is an open circuit to the direct current signaling impulses.

The two systems are fortunately operable over circuits of different characteristics, hence the effective combination on one pair of wires.

Increasing Selector Margins at Small Cost.

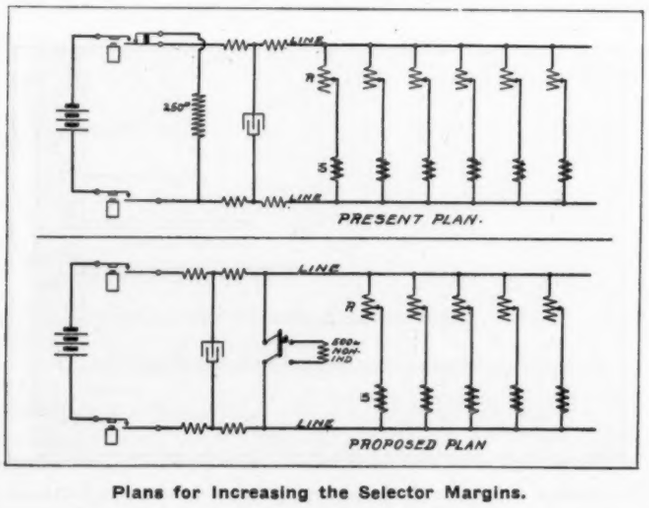
By C. S. Rhoads, Jr.

When installing dispatching circuits one may have noticed that with the dispatcher's equipment in and the first station installed, the selector refused to work. It seemed to choke up. The condensers in the dispatcher's signaling equipment flooded the selector, preventing it releasing between impulses.

There are two ways in which this can be overcome. Some means for discharging the condensers must be provided. One method is to use a relay of special design in which a back contact is closed at the instant the main battery is removed. The back contact connects to a resistance and the other side of the circuit, and this resistance discharges the condensers.

This is the plan used on some circuits. It has one great fault. It prevents the choking of one selector only when on the line, which occurs at only rare intervals, but the rest of the time it very greatly limits the margin of the selectors. The proportion of harm to good that it does is about as 100 to 1, and consequently it is a questionable method.

As everyone is aware, to short circuit an operated relay, makes it slow to release. That is what happens to the operation of selectors using this back contact plan. To reduce the tendency to stick, the size of core in the step-up relay has been reduced. But, nevertheless, one will be able to get a more snappy make and break without the back



Plans for Increasing the Selector Margins.

contact. The back contact rounds off the wave form too much for good practical results.

The other way to get a selector to work when it is the only one on the line, seems the logical one. When the whole line is on, no such device is needed, so why handicap operation with something that is not necessary? The following plan has been used on several jobs and found entirely satisfactory.

Put in a double pole, single throw, knife switch on the dispatcher's table, conveniently located. Paste a notice beside it with instructions to close the switch when the line is opened for test at any point between the dispatcher and a point three stations out. To the switch connect a resistance lamp of 500 ohms; any resistance approximating the line load, will suffice. An ordinary 110-volt Edison lamp has been found satisfactory. This load takes the place of the line and effectively discharges the condensers, preventing them choking up the selectors.

It may be claimed that this low resistance will put a drain on transmission. So it will, but then with only one to three stations on, there is a great surplus of transmission and this resistance brings it down to a point where it will not knock anyone's head off.

This above plan is inexpensive and efficient. If the choke up trouble when the line is opened for test has been noticed, it may be found desirable to install such a method.

Telephonic Train Control in England.

The first train-controlled system by means of the telephone in England has just been installed on one of the railways in Wales. The following description of the system recently appeared in a London journal:

"As the result of the installation of a system of telephones in all signal cabins, junctions, and stations on the line, the whole of the train working can be completely and directly controlled from the head office at Cardiff. The train controller in the general office can, by means of the telephone at the different points, know precisely the movements of all the trains, and is able to divert a train almost at a moment's notice. This will avoid the running of light engines and keep the general office in constant touch with the whole railway system, so that they will know frequently and exactly what mineral traffic is to be cleared and what empties are required in various parts of the coal field.

It is believed that as a result of the new installation much time will be saved, and consequently that there will be quicker dispatch. It is anticipated that the new service will prove not only useful to the railway company, but also to the large number of collieries which are on the railway system and whose output forms such a large proportion of the traffic. By the telephone system as many as 45 stations may be connected to one pair of trunk wires, any one station of which may be rung up by the train controller without ringing the bell at any other station, and the controller can hear the bell ringing at the station called. On the other hand, if necessary, all of the stations on the system may be rung up at the same moment."

Test of Telephone-Air-Steam Automatic Connector.

The Queen & Crescent Ry. is making a test of a new automatic connector on its crack train, "The Blue Grass Special," according to The Railway Record. The Durbin automatic train pipe connector, which is the name of the new invention, does away with trainmen crawling under cars to make connections of steam and air lines and includes a telephonic device connecting each coach on the train with the engineer's cab.

By means of the new invention the engineer, by pushing the button on his telephone set, may signal to the conductor, brakeman, or baggage master as he may desire. A bell rings in each coach, and any of the train crew can call the engineer by the same process.

The most important feature of the new invention, according to its inventor, is in the safety afforded trainmen. Thousands of lives have been lost and thousands of trainmen have been maimed for life by coupling steam and air pipes between cars. When the coupling is made on a train equipped with this invention, steam, air and telephonic connection is made automatically and without the touch of a hand.

Conductor J. J. McGraw, in charge of the Blue Grass Special, said that it was the greatest invention he ever had seen and far surpassed the old bell cord system, while the safety feature to trainmen was invaluable.

"Number, Please," Wins Husband.

The sweet "Number, please," of Miss Edna Hall, an Elgin, Ill., telephone girl, won her a husband. The bridegroom admitted that he became infatuated with his bride when he heard her voice over the telephone. Immediately after the wedding, which took place recently, the bride was the guest of honor at a shower given by members of the "Hello Circle" of Elgin telephone operators.

Telephone Overcomes Religious Prejudice.

In various locations in the central states the Menonites or Amish Dutch have large communities. They are a race of the "simple life" belief, hating modern ways, and are divided into two sects, the conservatives, or "hook and eye," and the liberals, or "button" Menonites. The conservatives, men and women, use only hooks and eyes on their clothing, and regard the use of buttons as an innovation of the devil. The "button Dutch" have for several years been patrons of the farm telephone lines, but the "hook and eyes" refused steadfastly to even let a telephone be placed in their dwellings on trial. However, they did not hesitate to use a neighbor's telephone on the "thank you" basis.

Th American neighbors have grown tired of this last manner of doing, and at a recent convocation of their peculiar religion, held at a community of the "hook and eyes" near Coshocton, Ohio, the conservatives are reported to have taken a vote on the question whether a telephone was a luxury or a necessity. The report further says that they voted it a necessity.

Thus it appears that even into this unprogressive class of people some light from the surrounding world has penetrated. There are large numbers of them in Pennsylvania, Ohio, Illinois and Kansas.

Claims to Telegraph 40,000 Words an Hour.

With his new invention, which makes possible the transmission or more than 40,000 words an hour either over telegraph or telephone wires, Antoine Pollack, the Hungarian inventor, has arrived in New York, says a dispatch from that city, accompanied by one of his associates, Otto Zeh, who will help him demonstrate the efficiency of the instruments.

The French government, after tests, has given sanction to its application to the official telephone and telegraph systems of France. The invention, it is said, depends on the action of a spot of light on specially prepared paper.

"In the transmitter," said the inventor, "an electric light spot is projected on a dark background between two mirrors, one moving vertically and the other in the transverse direction. The light spot, which denotes the character to be transmitted, is caught on the roll of sensitized paper and automatically photographed."

That is one part of the instrument. There are two others, the perforator and the receiver. The perforator is operated like a typewriter and the other two actuate automatically.

The operator writes and then places the perforated strip of paper on the transmitter, which sends it along to the recorder wherever it may be stationed. There it is recorded on another strip of paper.

Queries on Theory and Practice

Wireless River Crossing Possible But Not Commercial.

"I have heard of a scheme of river crossing worked out by terminating the wires in the water near each bank, and would like to know whether or not this plan has been tried out with success. Of course we know that any divided circuit must take its rate of current, but I can hardly imagine that in this case the telephones would get enough to operate them. I would like to try this across the river, which is 1,600 feet wide at this point, but do not wish to take the time and go to the expense with a scheme that is wholly impractical."

The plan which you mention has been tried out and it will allow conversation to be transmitted. However, it is not practical, for the loss is so great that but a small fraction of the current gets to its destination. Unless you care to make it merely as an interesting experiment, devoid of practical use, it is not worth the cost.

A Transposition Problem.

"I have five metallic circuits on a 10-pin cross arm, extending four miles. One circuit is of No. 14 iron, and another is of No. 12 iron, both running into a switchboard at the end of the four miles. The remaining three circuits are of No. 10 iron, each having a repeating coil at the four-mile point, wired according to your suggestion given about a year ago, so that each circuit is grounded beyond that point. The four-mile stretch is alongside of the railroad with telegraph wires all on other side of road. The Bell company's wires are on same side as ours.

I want to get the proper transpositions for a metallic circuit of No. 10 E. B. B. wire to be strung on the poles beneath the cross arm over the four-mile line mentioned. It is to extend about 21 miles from the end of the four miles without going into the switchboard at that point. This 21 miles of line has two grounded iron wires on it with local subscribers, and these produce heavy induction. I want to transpose the new metallic circuit so as to get rid of the induction and still retain the grounded circuits."

From the four-mile point mentioned, over the run of 21 miles it should be sufficient to transpose every mile, if the line insulation is kept up to standard, and repeating coils used in the distant exchange to connect to local lines. However, if the induction is too intense, it may be necessary to transpose more often, especially along the stretch which is paralleled by the distributing lines.

We do not have at hand your scheme of transpositions for the four-mile line to the switchboard, but you can fit the transpositions of the new line so as not to get cross talk from the existing lines. The new line may be transposed twice as often as the old ones, or the same spacing may be used, but staggered so that the transpositions will not come on the same poles.

Designation of Battery Terminals.

Please explain which side of a dry battery is the negative and which the positive. I understand from some books that the zinc is positive and from others that the carbon is positive. Which is right and what is the proper mark, + for negative or positive and — for negative or positive? Which way does the current travel, from positive to negative or from negative to positive?"

Current flows from positive to negative. Inside the dry cell the flow is from the zinc to the carbon. Therefore the zinc is the positive element and the carbon the negative.

Outside the cell the current flows from the terminal of the carbon through the external circuit and back to the terminal of the zinc. Hence the terminal of the carbon element is called the positive terminal or pole and the terminal of the zinc, the negative pole. The symbol + (plus) is used to designate the positive pole and the symbol — (minus), the negative.

In the Rural Line Districts

The Telephone Co., has begun to put in the metallic system and Mr. Ewens, Fessendens and Gibbs had new phones installed.—Ormsby Correspondence, Broken Bow (Neb.) Republican.

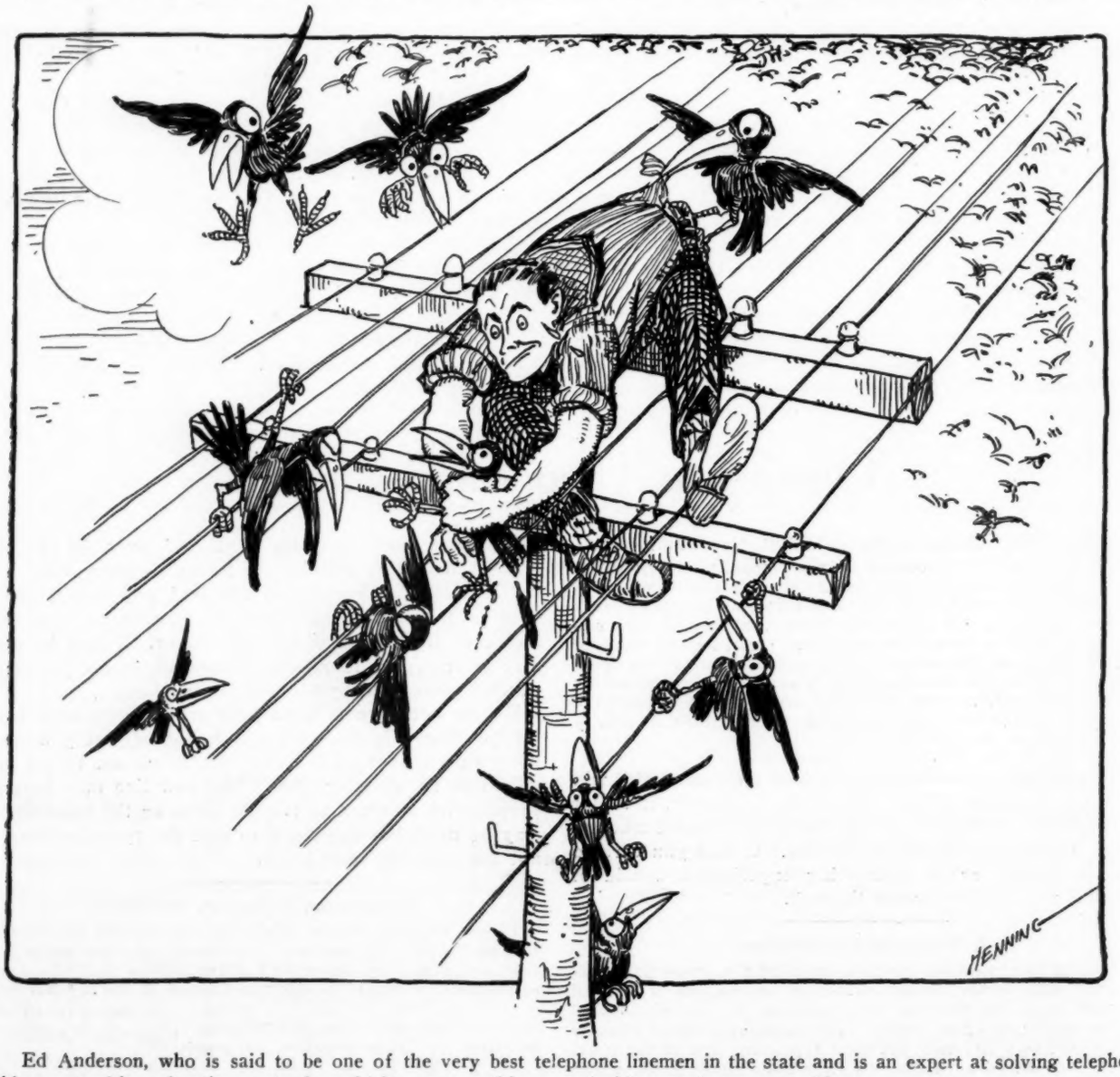
A new rural phone line is being put in that goes by Varmood and then crosses the river to Marion County, in the east part. Six or more will be on this line.—Shreveport (La.) Times.

Samuel Braden, a well known contractor of near Cameron, started hauling the telephone poles from Elm Grove to the vicinity of Cameron, preparatory to placing for the telephone line that is to extend to Waynesburg.—Wheeling (W. Va.) Intelligencer.

The Greenwood Telephone Co. is having new cedar telephone poles put up to take the place of the old ones.—Longwood Item, Withee (Wis.) Journal.

Fred O. Boyer, rural delivery carrier, erected an additional telephone line through here for the Mountain Telephone Company.—Longwood Item, Reading (Pa.) Eagle.

A new switchboard is to be installed at the County telephone office. Those in charge say that it will be completed the latter part of this week.—Milledgeville Item, Polo (Ill.) Press.



Ed Anderson, who is said to be one of the very best telephone linemen in the state and is an expert at solving telephone troubles, met with a situation yesterday which was something new in his experience as trouble man.

Mr. Anderson received a call from the Maple line, which is southwest of the city, about 11 o'clock, and immediately went to the trouble section. The telephones absolutely refused to ring, and the patrons on the line were becoming very impatient when Mr. Anderson's efforts were proving fruitless. Mr. Anderson did not give up, and after following the line until along in the afternoon, he found the seat of the trouble.

Several blackbirds were entangled in the wires, something which has never happened to a local line before, and caused a short circuit. The wires were stretched tightly, and the birds were wrapped around the wires so tightly that it was with great difficulty that Mr. Anderson succeeded in separating them from the wires. The blackbirds which were entangled in the wires were not the only ones to give trouble to Mr. Anderson, for about a thousand blackbirds, which is Mr. Anderson's estimate, kept up a constant chatter, and Mr. Anderson feared an attack from the birds while he was clearing the line.—Salina (Kan.) Journal.

From Factory and Salesroom

Predetermination Versus Demonstration.

By Claude L. Matthews.

When the Matthews guy anchor was first offered to its present owners in 1899, the inventor asked them to come out and witness a test of its holding power. This request was refused and the inventor was asked if he could show any time records of its performance. In reply, he stated that he had a large number of them installed in western Ohio and eastern Indiana and that many of them had been holding heavy strains from three to six years on wire fences and on the lines of the Central Union Telephone Co. This statement was investigated and verified. The result was that we added the Stombaugh guy anchor (now known as the Matthews guy anchor), to our line.

This was the first patented guy anchor put upon the market and, until 1902, the field for patented guy anchors was in our undisputed possession. In this year four or five inventors appeared on the scene with "anchors" in an attempt to take some of the business which we had created for a substitute for the deadman. I believe that not one of these early attempts to get in on the anchor business is now on the market, although for a year or so some of them had a considerable rage. They would all hold splendidly on what is generally termed by the linemen a "daylight" test, i. e., when they are put in and pulled out the same day. This sort of a test we have always maintained to be unscientific. The correct way to judge an anchor, an automobile, or anything else is by its service and efficiency records. Packard doesn't ask you to buy his car after taking a ride in it. He says, "Ask the man who owns one."

I maintain that a screw anchor has positive points of superiority over any which has to be buried in a hole. A filled hole is never as solid as the surrounding solid earth. Therefore it offers an easy path for the water from the rain of summer and the snows of winter to seek its level. This water first softens and then erodes the surface of the wall of solid earth that surrounds the hole and, in a year or two, the anchor that showed so well on the "daylight" test is no longer set in solid earth at the bottom of the hole, but in a quagmire of earth softened by the surface waters flowing down the filled tube, like a reversed lamp wick sucking it down.

Add to this condition the fact that there is a continuous strain on the line, that is eternally trying to hammer the anchor out. The Matthews guy anchor, on the contrary, is screwed down into the solid earth without disturbing it any more than a corkscrew does a cork and has no moving parts to set.

In a recent address made by the famous efficiency engineer, Harrington Emerson, he said that there are three ways to ascertain quality: "To rely on impressions—to trust to demonstrations—to predetermine by analysis."

"Impressions are unconscious analysis," he continued. "Scientific analysis selects, classifies, extends, verifies impressions. All reliance on impressions is reliance on vague, indefinite analysis. Because of the vagueness and uncertainty of these impressions by which they have so often been deceived, men have rejected the method of impressions instead of developing it and have depended on demonstration.

"Demonstration as a basis for selection is both crude, unnatural and fallacious. If we want good belting we specify the part of the hide it is to be cut from and the method of tanning. No amount of demonstration that a particular neck or belly piece is giving good service justifies the general acceptance of belting from the neck or belly. No amount of evidence that an emergency cast iron link in an anchor chain holds through a storm induces admiralty authorities to accept cast iron chains for anchors.

"Keely made splendid demonstrations of the power of his motor, secured a couple of million dollars by his demonstrations, and some of his admirers and backers promulgated a new philosophy. Nevertheless he was a swindler. Wilhelm Ostwald, the great thinker and scientist states: 'All knowledge has but one purpose, i. e., that of predicting the future.' As to materials and equipment our scientific methods enable us to forecast performances."

When you consider so important a thing as the safe anchorage of a telephone line, either do one of two things: First, put in a good strong deadman that can't fail, or else select a patented anchor that has a record of more than three years of efficient service on lines that are similar to the ones that you propose to build. Get the manufacturer to produce records that mean something.

If you think you must have a test to independently determine their worth, don't get fooled into a "daylight" demonstration, but buy some of the anchors that you wish to consider and make a service test of at least two years. It was on such a test as this that the very conservative engineers of one of the largest of the Bell companies adopted Matthews guy anchors six years ago. After using nearly 20,000 of them the company has not had any complaint of their not holding the strains for which they were designed.

Effective Advertising for Telephone Improvement Co.

The Telephone Improvement Co., of Chicago, is doing what many large concerns are—that is, bringing to a pros-

ANOTHER INSTANCE WHERE TELEPHONY HAS MADE GOOD

Advertising results are mainly attributable to the careful attention subscribers and readers give a publication. We are always glad when TELEPHONY advertisers find that their advertising is paying. We have received the following letter this week from R. S. Mueller, 423 High avenue, S. E., Cleveland, Ohio, telling of his TELEPHONY experience:

"The advertiser is generally quick enough to tell you of disappointing results, but perhaps generally neglects to advise you of satisfactory returns.

I want to give a voluntary testimonial as to the efficiency of TELEPHONY in reaching the industry it covers. In recent issues of TELEPHONY three half-page advertisements of mine have appeared and these advertisements have been the means of selling over $1,800 worth of apparatus. There is absolutely no question about the credit belonging to TELEPHONY, as the particular equipment was not advertised in any other medium.

Your classified advertisements seem to be carefully noted by your readers. I recently ran a couple of lines three times in this section, by means of which I sold the equipment offered, and, in addition, had to turn down orders for twice the original quantity advertised."

pective customer's vision, by means of stereopticon slides, all of the important facts, statistics, data, etc., bearing upon the operation of the system. This kind of advertising appeals readily as attention is concentrated upon the pictures presented and the added advantage of explaining each view or operation carefully makes the demonstration most realistic.

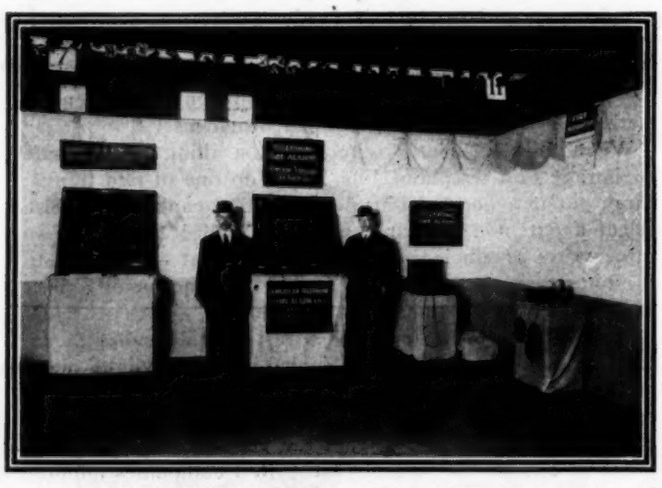
E. C. Lewis, of the Telephone Improvement Co., fitted up one of the rooms of the Chamberlain hotel at Des Moines during the convention just held in that city. Here he presented pictures which possessed much interest for those who attended the convention.

The company has obtained stereopticon slides showing various exchanges at present using the Auto-Manual and has found that this kind of advertising does much to stimulate and maintain interest.

American Telephone Fire Alarm at Des Moines.

Victor T. Van Slyke has arranged to represent the Denio Fire Alarm System in the state of Iowa and has tentatively formed a company known as the Denio Fire Alarm Co. of Iowa, of which he is general manager.

Temporary offices have been established in the Blackhawk National Bank building, Waterloo, Iowa. When seen at the Iowa telephone convention at Des Moines, Ia., Mr. Van Slyke was very warm in his enthusiasm for the future possibilities of the system and is now making careful, yet



A Double Barrelled Exhibit of Fire Alarm Equipment.

very complete, plans for an aggressive campaign in its behalf, in the state he has been assigned.

The accompanying photograph shows the exhibit of Denio apparatus made by the American Telephone Fire Alarm Co. at the Des Moines convention.

The company found it necessary to utilize double the usual amount of space in order to show the operation of the fire alarm system in connection with a working telephone exchange. This was very effectively done and a careful explanation of the new and important features of the system was made to all telephone men who were visitors at this booth.

One exhibition panel showed the various types of fire alarm boxes, and the other showed a complete installation for a store, school house or factory. It was actually demonstrated that a fire alarm call could be sent from any portion of a building to fire headquarters in less than ten seconds.

The exhibition was in charge of David G. Dee, chief engineer of the company, and Mr. Van Slyke.

The American company reports that it had a large number of inquiries from operating telephone men and that it expects to be in operation in Iowa at an early date.

It will be noted that the numbers above the booth augur well for the future of the Fire Alarm company, just entering a new territory.

Effective Catalogs of Office Fixtures.

C. H. Brownell, Peru, Ind., is sending to the trade two booklets descriptive of his system of office fixtures, which are said to be particularly well adapted to the use of telephone offices.

The system is based upon the unit or sectional idea and several illustrations are given to show its practical application to a particular case. The units, it is claimed, can be readily adapted to a room of any shape or size, thus supplying a standard and complete office equipment ready for use. The whole is shipped "knocked-down" and can be easily assembled or taken down by anyone of ordinary mechanical skill, without the use of any tool other than a screwdriver. The fixtures may thus be increased or diminished at will, or removed to another location without loss.

The counter, with the exception of the top, as well as the partition, is made in sections 30 in. wide, but a half section can be supplied when necessary. The method of construction is such that any angle can be turned. The partition can be extended to the ceiling. Details such as desks, drawers, filing cases or cupboards can be arranged to suit any business.

Filing cases, also supplied by Mr. Brownell, are not a part of the counter but are placed under it. Glass, or any design of grille, may be employed.

Plain red oak, quarter-sawed oak, genuine or imitation mahogany, or any other wood can be used, and finished, when desired, to match surroundings.

A rough sketch of the room with dimensions and a general statement of requirements is sufficient to procure a detailed plan and estimate which will be gladly furnished.

Butte, "Beaut" and Duhan, Says Ericsson.

You know Butte, Montana—the town Mary McLean made famous—remember? And, by the way, they pronounce it as though it were spelled "beaut"—slang for "beauty," you know—not as though it were spelled "but" or "butt." Not that they really think the town is a "beaut." Oh, no! They really do, who live there, but that isn't the reason for the pronunciation. And you want to particularly notice that it isn't pronounced "butt," for that's the funny part of this story. Sort of rambling, isn't it? But if you're patient you'll learn all about it if you can just keep on till we get to the 27th chapter. That's where the mystery all comes out—just as easy.

Now comes our hero and a peculiar coincidence or circumstance, or whatever you may call it—and don't forget about "butt" and "beaut" while we're telling it. Also remember that we have clearly proven that you simply can't tell "what's in a name."

You'd think "Duhan" was Irish, wouldn't you And you wouldn't intend any reflections on the respected people of that persuasion, would you? It does sound Irish, for a fact, but he isn't. Who? Oh, yes; sure, Mike, we forgot. Why, J. Duhan. He, J. Duhan, isn't Irish and he isn't ashamed of it. Neither is he very big; but they do say that he's a "beaut" for his size. See—that's where the "beaut" part comes in, and now one mystery is out, thank goodness.

And now for the anti-climax and mystery number two. About the first of the year nineteen-hundred-and-bad-luck a most mysterious function took place at Butte in the realm of the Sons of Great Jove, said function being termed and called and otherwise named a "rejuvenation." This doesn't mean much to you, unless you have a potential and wear a little red devil in your buttonhole, but it meant a lot to

our hero. A "rejuvenation" is no place for a nervous, popular man and Duhan is both, though he's not Irish, recollect.

Did you ever ride a goat?? No joke is it, especially if you're popular? We will answer our own question—no, indeed!! None whatsoever! And what do goats do, among other things? Again our answer comes promptly—"butt." And there you are, at last. Now it's all over and out—and what a relief!

But, you ask (and there it is again—"but"), what has all this to do with Duhan? Why, Duhan rode the goat. And reports from the dark recesses of Neptune's lair have it that Duhan "got his."

Rumor also says that he's on the job from 8:00 to 11:00 and back again, Sundays and holidays and all other legal days of recreation included. That's probably the reason he isn't married. He can't stop long enough to take a honeymoon and, of course, one must, you know, when one gets married.

And he's really the "whole works" in the Montana Electric Co., for naturally, with Duhan working as described and illustrated above, there isn't any work left for anyone else.

And—we nearly forgot—poor little Duhan says he'd a darn sight rather sell Ericsson telephones than ride goats. Not much choice, you may cynically comment—but ask Duhan. He sells 'em.

How a Laugh Lost a Million.

A laugh at the wrong time lost Herman W. Ritterhoff a million dollars, says the Kansas City (Mo.) Star. Mr. Ritterhoff is the contracting superintendent of the Home Telephone Co. For 35 years he has been working for different telephone companies in Kansas City and it hasn't soured his temper nor worn the edge off his happy disposition, nor smothered his hearty laugh. But he laughed once in the wrong place, and that gave him one of his best stories.

"Did I ever tell you how I missed being a millionaire?" is the way he begins this story. "No? Well, the chance came to me 20 years ago when I was working for the old Bell Telephone Co. Its offices then were at Sixth and Wyandotte streets and we used the old Blake transmitter, a telephone that had a crank in the front of the box, which you whirled around a half dozen times to call central. One of our customers was A. B. Strowger, an undertaker, who had his place of business on the north side of West Ninth street, between Wall and Wyandotte streets. Strowger had more trouble with his telephone than any other man in town and, as I was the trouble man, all of his complaints came to me. Nearly every day he would call me up and complain and curse and threaten to tear around about his telephone. I sent every workman in the office down there at different times but they could never find anything wrong with his telephone, and this always increased the fury of old Strowger.

"'Whenever your men come my telephone works all right, and as soon as they go away the dad burned old 'phone refuses to work,' he used to say. 'I tell you it's the girls at the switchboard that are doing it. They've got it in for me.'

"He became possessed with the idea that the girl operators were systematically working against him, and he was so convinced of this that he got to hate them, and his next idea was one of revenge against them.

"'I'm going to put every girl telephone operator out of a job one of these days,' he said to me one time over the telephone.

"The climax came one day when a friend of his, whose wife had just died, tried to reach the undertaker over the telephone and could not do so, and then called another undertaker and Strowger lost the patronage. So I decided to go myself to Strowger's place and see what was wrong with his telephone. When I went in he stormed and raved about the money he had lost, and the girl operators.

"'It's those girls in the central office that's doing it, Ritterhoff,' he said to me. 'But I'm going to get even with 'em. I'm going to put every last one of 'em out of a job. Look at this.'

"And he pulled out a drawer of his desk and took out a lot of drawings and spread them out before me.

"'What is it?' I asked him.

"'Well, sir,' he said, 'I've set here for hours at a time watching that durned old telephone of yours, cussing them girls that's got it in for me, and figuring out a plan to get even with 'em. And I've got it. I've got the thing right there that's going to throw every one of 'em out of a job. I've invented a telephone that don't have to have no central switchboard nor no girls to operate it, and there it is.'

"Well, sir, I looked over his plans, and I saw right away that he had made a wonderful discovery. And then I tried to find out what was wrong with his telephone, and I soon found it. He had an old tin sign with his name on it hanging out in front and it got rusty, and he had a new one painted and brought the old sign in the shop and hung it on the rear wall over his telephone. When his front door opened and shut it caused a draught of air, and the tin sign hanging on the wall swung back and forth, and occasionally it would get caught in the two binding posts that stuck up above the telephone and would short circuit it so the telephone would not work until the door would open and another draught would swing it free.

"Strowger was not much of an artist, and his drawings were very crude, but he had a good idea all right. He proposed to me that if I would help him with his plans and set them in shape so he could apply for a patent he would give me 10,000 shares of stock in the company he intended to organize to put his invention on the market, and I agreed. He came with his drawings the next Sunday to my office in the telephone building and I fixed up his drawings and he sent them to Washington and was granted a patent for the automatic telephone.

And Here's Where the Fatal Laugh Came.

"He sold out his undertaking business and took his patent to Chicago and rented a suite of rooms in the Rookery Building and put up a working model of his automatic telephone there and then sent for me to come and see it in operation. I went and, while his device was practical, and worked to perfection, it was put up so awkwardly and the workmanship on it was so crude, that when he opened a closet door to show it to me, and I saw the clumsy soldered connections on the wires I laughed loud and long. I couldn't help it.

"But that laugh cost me a million dollars. Old Strowger slammed the closet door shut. He was mad as a hornet, and he turned his back on me, and wouldn't speak to me

AN APPEAL FOR TRADE LITERATURE.

TELEPHONY finds that many of its advertisers are not represented in its catalogue files. Frequently a prospective purchaser visits our offices seeking information—or, perchance, some company may call up desiring information and this can be promptly furnished by a reference to our catalogue files. We would appreciate receiving all the latest catalogues, bulletins and folders—to complete our records for the benefit of our subscribers and advertisers. Your co-operation will be much appreciated.

again. He wouldn't even answer the letters I wrote him after I returned to Kansas City.

"Soon afterward he organized a company with $50,000 capital to push his invention, and that was the beginning of the great Automatic Telephone Co. Before I could go to Chicago again and claim my ten thousand shares of stock Strowger died, and I found out that he had left me out of his company because I had angered him by my laugh at his clumsy workmanship.

"Now that Automatic Telephone Co. which old Strowger organized has grown to be one of the big and wealthy companies of this country, and the ten thousand shares which I didn't get in it would have made me a millionaire. They are installing 20,000 of his automatic telephones in Chicago now; it is used almost exclusively in California. They are planning to put it in New York, and it may supplant all other telephones in time.

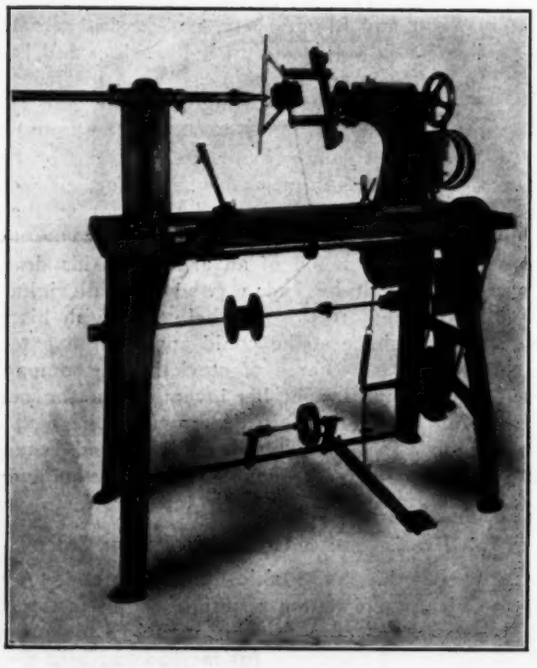
"It's no use for me to describe how the automatic telephone works, as it was all told in the Star recently anyway, but the article did not tell that an undertaker in Kansas City invented it as a means of getting revenge upon telephone girls, nor that another Kansas City man lost a million-dollar interest in it because he could not smother a laugh."

The International Winder—A New Device.

The International Fuse Lighter & Electric Mfg. Co., 512 Consolidated Realty Building, Los Angeles, Cal., has recently placed on the market a new winder, known as the International.

This machine, which is here illustrated, is described by the company as follows:

"The International Winder is a machine designed for the purpose of winding any electrical device that can be manufactured—transformers, coils, field and induction coils, solenoids, drum, disc, core or ring armatures, heating elements, etc.



The New International Winder.

It is a remarkable invention tremendous in the range of its possibilities. For many years electrical shops have needed a machine that would reduce the present high cost of manufacturing and repairing. This machine meets every demand.

The wasteful nature of the old method of winding must be apparent at a glance. Not only is it wasteful of time and labor but it is actually deficient in clean cut workmanship as compared with machine winding.

Below appears a schedule of comparisons between hand winding and machine winding.

These are facts proven by numerous tests—they tell their own story. Compare them, item for item.

This machine will wind coils, etc., of any shape or length with any size of wire and spacing. The wire is fed automatically, running directly from the spool to the armature, etc. The winding is absolutely perfect—an impossible condition when done by hand. In addition each turn is counted automatically.

TABLE OF COMPARISONS.

	Old Way.	New Way
Fan Armature	7 to 8 hours	35 minutes
500 Volt Ring Armature	4 to 5 days	4 to 5 hours
500 Volt Field Coil 5 H.P. by lathe	8 to 9 hours	2 to 2½ hours
Heating Coils	½ hour	5 minutes.

The adjustable coil former is one of the important features of the International Winder. Being adjustable, it eliminates the usual wooden form and by its simplicity of operation and its perfection in action, makes a perfect coil—clean, unmarred and quick.

The coil taper is an attachment, also of great importance. Through this ingenious device, coils are taped better, more solidly and more rapidly than could be done by 20 men taping by hand. The economy and efficiency of this feature are instantly appreciated as soon as seen."

The company proposes to lease its machines, not sell them. Full particulars will be mailed upon request.

Detroit Wire Company Records Big Gains.

At the recent annual stockholders' meeting, of the Detroit Insulated Wire Co., President E. E. Keller presented one of the most satisfying reports in the company's history. It was shown that the successive annual increase in business during previous years had been largely surpassed in 1912, the sales approximating a 75 per cent. gain over 1911. The finances of the company were shown to be in exceptionally fine shape, and with the prevailing optimistic feeling and outlook for 1913, an even better record is anticipated.

Extensive additions have been made to the manufacturing facilities of the factory, embracing the provision of increased floor space and new machinery and equipment, which, within the next 30 days, will admit of 50 per cent. increase in the present capacity. This company is now manufacturing all sizes of solid and stranded rubber insulated wire, including the largest size cable, and has just completed more than a mile of two million circular mil for one of its prominent customers.

The entire plant has been brought to the modernized limit of production and efficiency, including the installation of a sprinkler system, with a tank capacity of 40,000 gallons, at 75 ft. elevation, distributing water through approximately six miles of pipe, carrying 2,000 sprinkler heads.

Paragraphs.

A. J. KENNEDY, formerly manager of the incandescent lamp department, of the Westinghouse Electric & Mfg. Co., Los Angeles district office, has entered the firm of B. F. Kierulff, Jr. & Co., of that city, as sales manager of its electrical equipment department.

THE COFFEY SYSTEM & AUDIT CO., Indianapolis, has added to its staff of expert accountants, H. E. Waterhouse, of London, England. Mr. Waterhouse has been connected with the accounting department of the National Telephone Co. for more than 12 years. This concern, as TELEPHONY readers know, was taken over recently by the British government. Mr. Waterhouse's first work for the Coffey company was the installation of the system for the Home Telephone Co., at

Goshen and Elkhart, Ind. His accession to the Coffey company's force of experts is a decided advance for that organization and is indicative of the continually growing demand for its system among telephone companies and other utility corporations.

THE NORTHWESTERN ELECTRIC EQUIPMENT Co., St. Paul, has issued an interesting Northwestern Buzzer this month, which is full of good things for the telephone man. If you don't receive this regularly, it will be worth while to ask to be placed on the company's mailing list.

THE STACKPOLE BATTERY Co., Saint Marys, Pa., announces a change of name to the Stackpole Carbon Co. This, it is stated, does not mean any change of interests or policies. The dry cell department has been enlarged to take care of the company's steadily increasing demand and the carbon department, it is declared, is the most up to date in the country.

THE PITTSBURGH REINFORCING POLE Co., Pittsburgh, Pa., is out with the second issue of the Reinforcer, its lively and readable little house journal. This number is even better than the first—and the first was mighty good. In it Editor McCombs (who is also, quite incidentally, sales manager of the company), explains why he discontinued trade paper advertising to publish the Reinforcer. He also says a number of the other things in an attractive way. Get on the mailing list. It's a good bet.

THE STROMBERG-CARLSON TELEPHONE MFG., of Rochester, N. Y., announces that it has again secured the services of Murray W. Redmond as salesman. Mr. Redmond's headquarters will be the Chicago office.

ALLEN HARVEY has succeeded H. C. Modlin as secretary and general manager of the Butler Electric Co., Perry, Iowa, which makes a specialty of ringing generators and lightning arresters.

W. N. MATTHEWS & BRO., St. Louis, is mailing an interesting folder to the trade, showing the method of installing the company's guy anchor and pointing out several places where, it is claimed, nothing but a Matthews would do the work satisfactorily.

THE ROME WIRE Co., Rome, N. Y., which is noted for its handsome calendars, issued monthly, has turned out a fine piece of art work for March. It is larger than the former calendars issued by this company, is done in colors and has the figures printed in a type face easily readable.

Again Operators Display Courage.

The New Ottawa Telephone Co., of Pt. Clinton, Ohio, has practically completed repairs on its plant, recently damaged to the amount of $5,000 by a fire. The fire was discovered by Miss Bessie Emch, the night operator, who was asleep in her quarters at the time. Although the danger was great Miss Emch sent in an alarm to the fire department and left the building thinly clad while her little eight-year-old niece, who was staying with her, was carried out by firemen. Owing to the plucky girl's courageous conduct the fire was confined to the first and second floors of the building.

With a $10,000 fire raging on the floor beneath and in a room filled with dense smoke, Molly Kehoe stuck to her post at the exchange of the Southern New England Telephone Co., in the Webster Block, says a Naugatuck, Conn., dispatch, after all the other telephone girls and employes had fled, and remained alone in the burning building, making all the telephone connections required, until the fire was extinguished. Her heroism alone prevented Naugatuck from being completely cut off from telephone service during the fire.

Miss Kehoe remained cool when the other telephone girls, two of whom fainted, were panic-stricken and when the other occupants of the building were climbing down ladders to safety, and stuck at her place amid the smoke, though it was so dense that it drove out the employes of the Naugatuck News in an adjoining building.

Telephones in the Canadian Forests.

That the work of forest fire protection has shown such vast improvement during the past few years has been due very largely to the increased use of the telephone in the protecting of inaccessible and mountainous timbered areas. The forestry branch of the department of the Interior of the Dominion Government, Canada, has kept abreast of all improvements and developments along these lines. It has engaged in constructing numerous telephone lines to assist in the better fire protection of the timber resources of the prairie provinces.

By far the largest forest reserve under the control of the dominion forestry branch is the Rocky Mountain reserve which includes all of the east slope of the Rocky mountains from the international boundary north for a distance of about 500 miles. This reserve has a width varing from 12 miles to about 200 and is crossed by four transcontinental railroad lines, besides several branch lines. Detailed examinations of the reserve were made during the past year for the purpose of laying out a telephone system that will give adequate communication between the various ranger stations and the headquarters of the division supervisors.

The plans call for a main trunk line running north and south parallel to the main crest of the Rockies in the two southernmost divisions, where the need of such improvements is most urgent. A beginning on this work has already been made and about 65 miles of line extending north and south of the Crow's Nest branch of the Canadian Pacific Railway has been constructed. Material has been ordered for about a hundred miles of line to be built north and south from the main Transcontinental line of the Canadian Pacific Railway and additional lines totaling between 75 and 100 miles are to be built in the forest reserve adjacent to the Athabasca River, some 250 miles west of Edmonton.

The greater part of this construction is through a very rough, mountainous country, along pack trails and mountain roads. Most of the lines are grounded circuits and are being built very largely after the specifications and methods of construction developed by the United States Forest Service and the timber protective associations of the Northwestern states.

Illinois Company to Better Plant.

The Macoupin County Telephone Co., of Carlinville, Ill., expects to have its new exchange building ready for use some time in April. The structure, which is a modern two-story brick, will be devoted to the local and toll operating rooms and offices for the officials. It will be fully equipped with rest rooms and other conveniences for the employes. A new Stromberg-Carlson full multiple, lamp signal, central energy system is being installed. The local lines are being rebuilt under the direction of G. W. Pringle, manager. The improvements will cost about $50,000. The company reports business as very satisfactory.

One May Be Disorderly Over Telephone.

"If you abuse people over the telephone, you are just as guilty of disorderly conduct as you would be if you talked to them face to face," was a ruling made recently by Municipal Judge Sabath in Chicago, fining a Mrs. Johnson for remarks made to a Mrs. Brooks. "You are a jealous woman," said the court, "and your abuse of Mrs. Brooks was as flagrant as if you had gone to her home and called her all the names in the dictionary."

Legal Cases and Decisions

By A. H. McMillan

Rule Limiting Conversation.

"Will you please answer in regard to the following: Our published limit for conversations on local lines is three minutes. Of course we do not always enforce this rule except at times when parties have considerably exceeded the limit and we need the line for some important matter. Have we a right to cut off conversations with private lines after the three minutes when other parties demand the line? Any information on this subject will be appreciated."

The publication of your limit for conversation on local lines makes it a rule of your company. In the enforcement of the rule, you have a right to cut off conversations with private lines after the limit has expired, when other parties demand the line. The fact that you do not enforce the rule at all times does not deprive it of its force.

Placing Wires Underground.

"By a newly passed ordinance in a city of 1,500 inhabitants, we are required to place our wires underground. If there are any decisions that can be used to fight such ordinance in the courts, will you please give references, or if there are any to sustain the city's position, we should like to know them."

We do not know of any decisions contrary to the right of municipalities to require telephone companies to place their wires underground. It has been held in New York that the state may, acting directly by its legislature, not only pass constitutional acts requiring the placing of electrical wires underground, but it may delegate such power to the municipal authorities. Under a proper delegation of power a municipal corporation may make requirements in this regard as binding as the state. Acts of this kind may be made to apply not only to companies to be subsequently organized but also to companies already organized and maintaining poles and wires in the streets. The cases on this subject will be found in Joyce on Electric Law, Section 425, Note 18.

Iowa Franchises.

"I am the owner of a telephone system which operates under a franchise granted by the voters of the town corporation in compliance with the franchise laws of Iowa in incorporated towns. Can a farmers' mutual company come in and occupy the streets and alleys without first getting a franchise? I enclose the franchise law under which my franchise was granted. Has it ever been changed?"

We do not know of any change in the franchise laws of Iowa since the enactment of those mentioned.

Answering your question, a farmers' mutual company or any other company can come in and occupy the streets and alleys of the town without first getting a franchise, if the town authorities make no objection. After they have come in, they can be expelled at any time by action of the town authorities. We do not believe that you have any right to object to the presence of the other company in the town. Your franchise gives you a permanent right in the town while the other parties are simply there by acquiescence of the town. We publish the laws of the state on the subject for the information of our readers.

"Cities and towns shall have the power to authorize and regulate telegraph, district telegraph, telephone, street railway and other electric wires and the poles and other supports thereof, by general and uniform regulation and provide the manner in which and place where the same shall be placed upon, along or under the streets, roads, avenues, alleys and public places of such city or town, and may divide the city into districts for that purpose." Section 775, Code of Iowa.

"No franchise shall be granted, renewed or extended by any city or town for the use of streets, highways, avenues, alleys or public places for any of those named in section 775, unless a majority of the legal electors voting thereon vote in favor of the same at a general or special election. The council may order the question of granting, renewal or extension of any such franchise submitted to a vote at a general election, or at one specially called for that purpose. The mayor shall submit said question to such vote upon the petition of 25 property owners of each ward in a city or 50 property owners in any incorporated town. Notice of such shall be given in two newspapers published in said city or town if there be two. If not then in one once each week for at least four consecutive weeks. The clerk shall prepare the ballots and the proposition shall be submitted as provided for in chapter on elections. The party applying for the franchise or for the renewal or extension shall pay all expenses incurred in holding such elections." Section 775, Code of Iowa.

Property Tax Precludes a License Tax.

A telephone company began suit against the city of Calhoun, Kentucky, and the police judge thereof, to test the validity of an ordinance that imposed a license tax of $100 on the company for the privilege of operating an exchange in the city. The validity of the ordinance was assailed upon the ground that a telephone company, which pays both an *ad valorem* and a franchise tax to the city, as this particular telephone company did, cannot be required to pay a business or occupation tax such as the ordinance provided for.

It was also contended that the license tax imposed was unreasonable, oppressive and confiscatory. A franchise tax was imposed upon the company by the State Board of Valuation and Assessment, which apportioned to the city its proportionate part of the franchise tax, which was paid by the company. It also appeared that the company had a franchise in the city under which it had built and conducted its exchange for a number of years.

The court held that if the company had in fact a franchise and paid an *ad valorem* tax, the city could not charge it an occupation tax. It also held that the company never obtained, in the manner pointed out in the constitution, a franchise from the city authorizing it to erect lines or poles or to establish an exchange. The constitutional provision (Sec. 164) is as follows:

"No county, city, town, taxing district or other municipality shall be authorized or permitted to grant any franchise of privilege, or make any contract in reference thereto, for a term exceeding 20 years. Before granting such franchise or privilege for a term of years, such municipality shall first, after due advertisement, receive bids therefor publicly, and award the same to the highest and best bidder; but it shall have the right to reject any or all bids."

On account of the failure of the company to obtain a franchise in this matter, the court held that the franchise it had, which it obtained simply by resolution from the city, did not take the place of the constitutional franchise and that the same was merely a license which merely protected the company against summary ouster.

The court also held that the imposition of the tax by the state board gave the company no right to conduct business in the city. It was further held that the license tax imposed was not shown to be unreasonable, oppressive or confiscatory. Cumberland Telephone & Telegraph Co. vs. city of Calhoun, 151 Southwestern, 659.

Falling Feed Wire.

A telephone company sued to recover damages for injuries to its telephone system, caused by the falling of a traction company's feed wire upon its lines. The feed wires were stretched above the telephone wires. During a sleet storm, the feed wire, which was improperly insulated by reason of negligent construction and maintenance, fell on the telephone wire. A judgment for the telephone company was rendered.

The supreme court held that the telephone company in such a case must prove its freedom from contributory negligence, the telephone company contending that it was relieved from making such a showing by statute providing that, in actions for damages for negligence causing personal injuries or death, the plaintiff need not prove want to contributory negligence. This law was held not to apply to actions for injuries to property.

Fort Wayne, etc., Co., Traction Co. vs. Monroeville Home Telephone Co., 100 Northeastern, 69.